Live Stock on Crown Ranges.

The number of live stock permitted on Crown ranges during the past four years was as follows:—

	Cattle and Horses.	Sheep.
1933	58,770	34,329
1934	69,960	36,569
1935	60,864	36,902
1936	77,137	46,084

Collection of grazing fees during the calendar year 1936 amounted to $11,043.75.

Range Improvements.

The closer utilization of the available range incident to increasing herds requires more improvements in the way of drift-fences and water development. This need will continue until all the available range is completely improved. The falling of insect-killed timber over vast areas of the Interior is reducing the available range and making other large areas inaccessible. This requires the clearing of many miles of trails and driveways to make the range accessible.

Once a big factor in range-improvement plans, the fencing of mud-holes is now in little demand. This is due to the series of wet years experienced recently. Water-holes and ponds have been filled up and swamps have become lakes again, so that cattle can get to drinking-water without being caught in the bogs.

The large bands of wild horses that once roamed and destroyed the ranges have been broken up and largely eliminated. There are always a few small bunches in existence to form a nucleus for larger destructive bands and constant attention will have to be devoted to this problem. In 1936 the wild-horse problem was handled through round-up rather than shooting.

During 1936 a larger programme of improvements was undertaken than in the previous year. In all, $4,455 was expended on range improvements, covering 85 miles of trails, 13 miles of drift-fences, 3 bridges, 8 holding-grounds, 5 water developments, 3 breeding-pastures, 1 cattle-guard, and 6 mud-holes.

PERSONNEL DIRECTORY.

Victoria Office.

E. C. Manning	Chief Forester.
C. D. Orchard	Assistant Chief Forester.
E. B. Prowd	Forester—Management.
G. P. Melrose	Forester—Protection.
F. D. Mulholland	Forester—Surveys.
C. D. Orchard	Forester (Acting)—Research.
N. F. Pite	Chief Accountant.
S. W. Barclay	Royalty Inspector.

District Foresters.

R. C. St. Clair	Vancouver.
A. E. Parlow	Prince Rupert.
E. E. Gregg	Prince George.
C. J. Haddon	Kamloops.
R. E. Allen	Nelson.

Supervisor of Scalers.

William Byers	Vancouver.

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PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF LANDS

HON. A. W. GRAY, *Minister.*

H. Cathcart, *Deputy Minister.* E. C. Manning, *Chief Forester.*

REPORT

OF

THE FOREST BRANCH

FOR THE

YEAR ENDED DECEMBER 31ST

1937

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
Printed by Charles F. Banfield, Printer to the King's Most Excellent Majesty.
1938.

1937

VICTORIA, B.C., February 28th, 1938.

To His Honour E. W. HAMBER,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the Forest Branch of the Department of Lands for the year 1937.

A. W. GRAY,
Minister of Lands.

The Hon. A. W. Gray,
Minister of Lands, Victoria, B.C.

SIR,—There is submitted herewith the Annual Report on activities of the Branch during the calendar year 1937.

E. C. MANNING,
Chief Forester.

REPORT OF THE FOREST BRANCH.

REVIEW OF THE INDUSTRY.

The work of the forester is presumed to have been finished when the forest crop is ready for harvesting, or at least when the raw wood product is ready for sale. The business of producing the raw product, however, can only prosper as the processing and marketing of the finished manufactures prosper. Lumber, shingles, pulp, markets, and labour, therefore, are of primary interest in forest administration, even though they do stand quite outside the field of pure forestry; and it has been with some such thought in mind that for years past the Forest Branch Report has been introduced with a brief review of business conditions in the wood-using industries.

The year 1936 witnessed a rapid and most encouraging recovery from depression levels. The total scale of forest products was within 10 per cent. of the record cut of 1929, export established a new record, foreign markets were being developed along sound lines that gave promise of lasting benefits, and returns were working up toward satisfactory levels. This business revival carried into 1937, promising a number of new records which, however, conditions conspired to defeat. Wars, discouraging weather conditions, unprecedented ocean freight rates, and minor obstacles conspired to dampen early optimism. In spite of these, however, the year closed with a record log-scale, lumber export in excess of one billion feet for the second time, and some evidence that the worst of the unexpected difficulties lay in the past.

	1929.	1936.	1937.	Average, Ten Years to 1937.
	(Nearest 1,000—add 000.)			
Log-scale, F.B.M.	2,940,308	2,823,758	*3,035,553*	2,327,585
Railway-ties, pieces	3,526	1,325	1,191	1,765
Cords	153	171	155	168
Poles, piles, lin. ft.	*39,489*	14,269	22,116	18,722
Converted total scale, F.B.M.	*3,346,144*	3,020,773	3,241,916	2,580,196
Water-borne export, lumber	801,518	*1,202,994*	1,107,377	797,881

Figures in italic indicate record scales.

Snow conditions developing late in 1936 carried over into early 1937, forcing most of the camps to close late in January. Generally speaking, only those situated immediately adjacent to tide-water were able to operate. In spite of an unprecedented demand for logs, camps remained closed until early March, when they reopened, still heavily handicapped by snow. Logging conditions were variously described as the worst in the history of the industry and the worst in twenty years. At the same time ice seriously interfered with milling on the Fraser River. During the shut-down of more than a month log production dropped to between 10 and 15 per cent. of normal, and the mills experienced the greatest difficulty in securing adequate supplies.

By the end of March log-supply was improving, but the freight-rate situation and various other factors tending to curtail lumber-sales were making themselves felt. Log production was not a critical factor again during the year.

Production was curtailed for about six weeks again in July and August through the usual summer close-downs in some cases, and reduced operating schedules in others. The extremely bright prospects of the first quarter having been badly shaded, logging operations for the remainder of the year were on an easy basis.

Log-sales were well sustained throughout the year, with the exception of an accumulation of surplus cedar in August and subsequent months. A notable feature of the log market was the stability of price-levels.

Ocean freight rates were an important factor in the export field. Influenced by strikes in Pacific Coast ports, the Sino-Japanese war, and generally improved business conditions and consequent increase in cargo offerings, space was at a premium during the greater part of the year at greatly increased rates. With the British Columbia lumber industry depending on overseas markets for more than 55 per cent. of its business, ocean freights assume a particularly significant role. A downward trend in freight rates started before the end of the year, but too late to have much corrective effect on 1937 business, particularly as the demand for our products had already eased.

The United States quota on British Columbia shingles under the "Revenue Act" of 1936 continues to be an important factor in the local shingle industry and in disposal of cedar logs. Export of shingles to the United States for each half-year in turn is limited to 25 per cent. of the American market during the preceding six months. Quota for the first half of 1937 was fixed in March at 1,048,262 squares, as compared with 1,419,747 squares for the last half of 1936. This was further reduced to 892,373 squares for the second half of 1937 and the quota had been exhausted by the first week in November.

The latest cloud on the horizon is the possibility of the Ottawa Empire Trade Agreements of 1932 being modified through a proposed new trade treaty with the United States. Existing agreements are especially vital in the lumber trade with the United Kingdom. During the five years prior to 1932 our average annual shipments to the United Kingdom amounted to 70,560,000 feet. Assisted by these preferential agreements and by dint of extensive trade-promotion activities financed jointly by the Government and the industry, this market was expanded during the five years following 1932 to an annual average of 499,453,000, this year's shipments (1937) amounting to more than 648 million. The full significance of this trade is apparent only when compared with other totals:—

Total lumber production, 1937	About 2,000,000 M.
Total water-borne trade, 1937	1,107,377 M.
Shipped to United Kingdom, 1937	648,364 M.
United Kingdom trade	32.4% of total cut.
United Kingdom trade	58.5% of total export.
Average water-borne trade, ten years	797,881 M.
Average United Kingdom trade since 1932	499,453 M.

Behind the cold figures of board-feet of lumber there is the matter of employment, pay-rolls, and allied business. The loss of this market or of any substantial part of it would be a serious blow to the Province. Any change in tariff preference must therefore be viewed with concern not only by the lumber industry, but by business in general.

It is estimated that between 7 and 8 per cent. of our total timber-cut goes to the pulp-mills. Value of pulp and pulp products, however, amounts to more than 22 per cent. of the total value of the production of the forest industries (ten-year average, 1927–36), and the prospects are that pulp will assume an even more important place in the economic life of the Province in future years. Pulp, therefore, assumes an importance in the circle of forest industries that the mere consumption of timber fails to indicate.

Sharing with all other industry the difficulties of depression years, aggravated in Eastern Canada by overexpansion, pulp and paper have enjoyed a remarkable recovery during the past eighteen months. Canadian production in 1936 was 15.9 per cent. greater than in 1935, as compared with a 1-per-cent. increase in the United States and 10.4 per cent. in Newfoundland. British Columbia's increase was a little over 8 per cent., far the greater part of which was made into newsprint. The past year has about maintained the production of 1936.

Orders were so plentiful during the early part of the year that quotas were resorted to in some cases. Plant improvements were undertaken by the various mills to a total of nearly 3 million dollars. Labour shared in this recovery by wage increases of as much as 27 per cent. Newsprint prices advanced a further $5 to $50 per ton with the beginning of the new year, 1938. The extraordinary prospects of January, 1937, were not fully realized throughout the year, nevertheless pulp and paper constituted one of the bright spots in the 1937 history of the forest industries.

No review of the forest industries in British Columbia can be quite complete without some reference to minor products, notably poles, piles, hewn ties, and cordwood. These combined have averaged only 9.7 per cent. of our total cut during the past ten years and

account for only 206 million out of a total scale of 3,242 million in 1937, or less than 7 per cent. Their major importance rests in the fact that little equipment is required in their production that is not found around the average farm, and that they are produced in large measure by ranchers during the slack winter months. A contract for a few hundred ties or poles means employment and cash income for the pioneer settler and his team. Much of the opening-up of agricultural areas of the Province has been made possible by the "grub-stake" earned through the sale of ties, poles, and cordwood. Our average production for the past ten years has been 1.7 million ties, 168 thousand cords, and 18.7 million feet of poles, worth approximately 3½ million dollars, a larger proportion of which is distributed as wages to labour than is the case in any other finished wood product.

The heyday of the tie business in British Columbia extended from 1920 to 1929, with production usually over 3 million and touching 3.8 million in 1921. In 1933 it had dropped to less than half a million, but since then has been in excess of one million per year.

The pole market opened in 1937 with a strong recovery, but fell off later in the year. Production increased from a low of 4.5 million lineal feet in 1933 and 1934 to 8.8 million in 1935, to 14.2 million in 1936, to 22.1 million in 1937. The prospects are that there will be some recession in 1938.

Cordwood enjoys a purely local market and, with the exception of a remarkable cut of 331,000 cords in 1933, has been fairly stable for many years at between one and two hundred thousand cords.

Some study was devoted during the year to the hemlock-marketing problem. It is urgently necessary that this excellent product should reach foreign markets in a condition in keeping with its true quality. When this is done hemlock should rapidly attain much the same favour now accorded its associate, Douglas fir. In the meantime we continue to handicap our trade-promotion efforts chiefly by shipping green hemlock, and our cut of fir continues out of all proportion to our relative resources in this and other species. Fir in 1937 represented 56 per cent. of the total scale in the Vancouver Forest District, and cedar and hemlock 19 per cent. each. In the forests of this district there is the same amount of hemlock and fir, with cedar only 9 per cent. behind in quantity.

ORGANIZATION AND PERSONNEL.

Turning to forest administration, the work of the Service in such specialized branches as Surveys, Management, Research, Protection, and Grazing has progressed during the year in keeping with the funds and staff available. These specialized operations are treated in some detail in the following pages. The routine work of general administration continues to increase until the staff is now definitely overtaxed. The trend is indicated in the accompanying extracts from the usual published statistical tables of routine work found elsewhere in this report.

	1937.	Average, Ten Years, 1928–37.
Total timber scaled (million F.B.M.)	3,241	2,580
Timber-sales awarded	1,451	1,107
Timber-sales cruised	1,471	1,128
Logging inspections made	11,507	9,453
Timber-marks issued and transfers	2,691	2,103
Ranger staff	55	56

DISTRIBUTION OF FORCE, 1937.

Forest District.	PERMANENT.												TEMPORARY.						Grand Total.
	Chief Forester, Asst. Chief Forester, and Foresters.	District Foresters and Assistant District Foresters.	Supervisors of Scalers and Assistants.	Scalers and Assistant Scalers.	Assistant Foresters and Junior Foresters.	Inspectors, Royalty, Mechanical, and Export.	Supervisors of Rangers and Fire Inspectors.	Rangers.	Draughtsmen.	Clerks, Stenographers, and Messengers.	Miscellaneous.	Total, Permanent Force.	Assistant Rangers.	Patrolmen, Lookoutmen, and Dispatchers.	Launch Crews.	Cruisers, Compassmen, and Packers, etc.	Miscellaneous.	Total, Temporary Force.	
Vancouver	....	2	1	24	2	1	4	16	2	23	2	77	25	28	8	....	4	65	142
Prince Rupert	....	2	....	1	....	....	1	8	....	6	....	18	8	8	3	....	1	20	38
Fort George	....	2	....	....	....	....	....	7	....	5	....	14	9	10	....	....	1	20	34
Kamloops	....	2	1	....	3	....	1	14	1	7	....	29	19	25	....	....	5	49	78
Nelson	....	2	1	....	....	....	3	10	1	7	....	24	25	24	....	....	3	52	76
Victoria	5	....	....	....	12	2	....	....	6	29	....	54	....	....	....	20	4	24	78
	....	....	....	....	5*	....	....	....	2*	4*	5*	....	....	....	....	....	....	....	.....
Totals	5	10	3	25	17	3	9	55	10	77	2	216	86	95	11	20	18	230	446
	....	....	....	....	5*	....	....	....	2*	4*	5*	16*	....	....	....	....	....	.....	16*

* Permanently employed but not Civil Service appointments and paid from funds other than Salary Vote.

PERSONNEL AND ENROLLEES.

Forest Development Projects, December, 1936, to June, 1937, and Young Men's Forestry Training Plan, June to October, 1937.

	Foresters in Charge.	Superintendents.	District Supervisors.	Clerical.	Foremen and Sub-foremen.	Cooks, 2nd Cooks, and Flunks.	Time-keepers, First Aid and Miscellaneous.	Enrollees.	Total.
Forest Development Projects, December, 1936, to June, 1937	1	2	2	16	47	56	46	3,061	3,231
Young Men's Forestry Training Plan, June to October, 1937	1	2	3	4	31	37	7	585	671
Totals, Individuals	1	2	5	16	64	83	47	3,646	3,874

YOUNG MEN'S FORESTRY TRAINING PLAN.

The Young Men's Forestry Training Plan, an experiment in the summers of 1935 and 1936, established itself during the summer of 1937 as a possible permanent factor in the development and protection of the forest resources of British Columbia. The success of British Columbia's previous years' programmes had a bearing on the Dominion Government's decision to contribute towards similar programmes throughout the Dominion under the heading of "Youth Training." Approximately 40 per cent. of the total expenditures incurred in this year's programme was borne by the Dominion Government, whereas the previous years' programmes were financed entirely by the Province.

Just as the young forests of British Columbia are an asset of the future, so too are the young men of the Province, and this programme has proved itself a valuable means of developing character, initiative, and self-reliance in the young men enrolled and of accomplishing essential forest development and protection work which it might otherwise be impossible to undertake. The Young Men's Forestry Training Plan has demonstrated conclusively that it is practical to combine youth-training and Forest Service work with mutually beneficial results.

The Department of Labour again handled all details of enrolment, selecting the eligible men, and, as in previous years, co-operated with the Forest Service in every way possible. Enrolment was restricted in so far as possible to single men between the ages of 18 and 25

years with high-school education, resident continuously in British Columbia for at least five years and physically fit, preference being given to suitable young men in needy circumstances. Applicants were required to undertake any class of forest-work and to serve in any part of the Province. Men previously employed in the winter programme of Forest Development Projects were not eligible. Ranger Assistants resident at home were paid $45 per month with expenses away from headquarters. All other enrolled men were paid $1.75 per day of work with 75 cents deducted for board, lodging, and transportation, except for Sundays and statutory holidays. Straw-bosses were appointed from regularly-enrolled men and paid an additional 25 cents per day of work.

Out of a total of 1,009 applicants it was only possible to employ 585 young men in this year's programme. During the season 81 of these secured employment, either through their own efforts or those of forest officers; 61 returned to school or university; 25 quit for no specific reason; 8 left, due to sickness; and 9 were discharged. From a questionnaire sent out two months after the close of the season to all regularly-enrolled men, approximately 80 per cent. of which were returned, it was found that 40 per cent. of the men enrolled had had employment since leaving the project, approximately 20 per cent. were then employed, and 90 per cent. wished to take up various phases of forestry-work as a livelihood. There is little doubt that the young men enrolled in this programme returned to society in better health and better equipped for the job of citizenship.

Forestry lectures were given to each project by foremen, forest rangers, supervisors, or headquarters staff. Moving pictures of work being undertaken at other projects and of the major industries of the Province were shown where possible. Supervision of the work and instruction of the enrollees was improved this year by the detailing of forest officers as special supervisors in the Vancouver, Kamloops, and Nelson Forest Districts.

Under the tutelage and assistance of the forest rangers throughout the Province, 110 young men were employed as Assistants, and, as most of them had had previous experience in this capacity, they proved a real asset to the general organization of the Forest Service. By looking after cars, pumps, and equipment; filing and typing reports and handling general correspondence; checking and recording readings of fire-hazard indicators; acting as dispatchers in and out of the fire season; as chainmen, compassmen, and assistants on inspection trips; and by actually taking care of small fires by themselves, they were well worthy of the title of "Assistants." A number of these men, during the past two years, have successfully passed their Assistant Ranger examinations and consequently are in line for advancement.

Valuable work was undertaken at the three Forest Experiment Stations by crews of approximately thirty men. At the Green Timbers Forest Experiment Station three million seedlings in seed-beds required constant thinning and cleaning, in addition to general improvement-work on the reserve. At the Cowichan Lake Forest Experiment Station the major work consisted of improving the highway into the area, although considerable work was done on the reserve itself under the supervision of technical forest officers. Further development and improvement-work was undertaken at the Aleza Lake Forest Experiment Station. These three Stations and one truck-trail project camp in the vicinity of Moyie were used as clearing centres where practically all men were assigned prior to being selected and sent out to smaller and more isolated projects throughout the Province.

Twenty-five forest development and protection crews of from ten to twenty men each were placed throughout the Province where the major portion of the work consisted of the construction of protection-trails and truck-roads, maintenance and construction of telephone-lines, lookouts, cabins, and permanent Forest Service buildings. Where possible, stream-improvement and trail work were undertaken for the Provincial Game Board and several projects served the dual purpose of opening areas for forest-protection and assisting local Fish and Game Clubs, Boards of Trade, and Irrigation District Boards in making certain areas more readily accessible for them. Certain grazing interests were likewise assisted in this way. With so much forest protection and improvement work to be undertaken, it is difficult in a summer programme to participate to any great extent in park development or recreation projects, but crews were placed in Tweedsmuir Park, Kokanee Park, at Silver Tip Falls, and on Hollyburn Ridge. Trails, roads, and general development-work enhanced the value of these areas for tourists, hunters, fishermen, hikers, alpinists, and skiers. Work essential in the protection of our timber from insect-infestation was undertaken for the

Entomological Branch of the Department of Agriculture, Ottawa, at their Experiment Station at Lumby, where station improvements, protection trails and roads were constructed. Information from all Y.M.F.T.P. projects was forwarded to the Station concerning saw-fly infestations, which information will be of inestimable value in studies being made. Experimental mosquito-control work through the drainage of swamps was an important phase of work undertaken at the Entomological Station.

FOREST DEVELOPMENT PROJECT.

During 1936 the Forest Branch was approached with regard to the possibility of evolving some scheme of productive labour for unemployed single men which might replace the more or less discredited "camp" system of depression years. Employment was required only during the winter months, the worst possible period for forest-work, but it was agreed that by confining our efforts to the south coast, where weather conditions would be the least unfavourable to useful work, a few hundred men might be profitably used. This marked the inception of the Forest Development Project in the fall of 1936, the first programme in Canada designed primarily for forest development, protection, and conservation, and reforestation as a means of alleviating unemployment.

The Dominion Government contributed 50 per cent. of the cost other than administrative costs. The Provincial Department of Labour had the exclusive responsibility for enrolling the men; the Forest Branch was exclusively responsible for selecting the work projects. Supervision and administration of the work was entrusted entirely to Forest Branch personnel, wide use being made of Assistant Rangers of wide experience in handling large fire crews but normally employed during the summer months only. The problem of supervision was especially difficult, in that direct control over employees in a system of isolated work projects was not possible, it being necessary to rely on the individual initiative, resource, and good judgment of each foreman to achieve the best results. Herein the Assistant Rangers were of a temperament suitable for handling such a programme through their years of experience in handling fire crews, Forest Service equipment, and construction problems under similar circumstances, and they proved to be the backbone of the programme. For general management and administration three experienced foresters were specially detailed by the Branch.

Regularly-enrolled men were paid at the rate of 30 cents per hour of work with an additional 5 cents per hour being paid to outstanding men acting as straw-bosses. Board, lodging, and transportation were charged for at the rate of 75 cents per day in camp. Flunkies and bullcooks were paid at the rate of $30 per month and board. Men paid by the hour worked a maximum of eight hours per day and forty-four hours per week. A portion of weekly wages due each regularly-enrolled man was withheld pending completion of period of employment, but in no case did this deduction exceed $16 per month. Upon termination of employment this deferred pay was made payable to each man by cheque at the rate of $4 per week, first payment coming due eight days after last day on project. Approximately 23,000 cheques covering monthly and deferred payments of wages were made out and mailed. With the period of employment in camp and deferred pay, men were ensured an income until at least the middle of June.

Four main classes of work were undertaken: Park and forest recreation development, watershed protection and improvement, improvement and development of Provincial Forest Reserves, and forest-protection.

This programme involved twenty-one projects in which the originally proposed few hundred men grew to a total of 2,809 enrollees.

Thirty-one per cent. of the personnel was employed in the development and improvement of established or potential park areas. This class of work involved road-construction, elimination of fire-hazards, deformed trees, slash and down timber, and the construction of trails and bridges. In many instances the summer work of the Y.M.F.T.P. was continued under this project through the winter.

Valuable work was undertaken in the protection and development of the Greater Vancouver, Victoria, and Nanaimo Watersheds, on which work approximately 28 per cent. of the personnel was employed. These projects were largely concerned with the construction of roads, trails, and fire-guards and the elimination of slash and snags.

Twenty-five per cent. was employed in the development and improvement of Provincial Forest Reserves; at the Green Timbers Forest Experiment Station, New Westminster; Cowichan Lake Forest Experiment Station; and the Campbell River Ranger Station. Much was accomplished in the clearing of land; building and improvement of roads, trails, and fire-lines; thinning, pruning, and general stand improvement work; telephone-line construction and relocation; and the elimination of fire-hazards. Similar improvements were also undertaken on the University of British Columbia Demonstration Forest at Point Grey.

Sixteen per cent. of the men enrolled were employed on forest-protection work. Extensive construction and improvements were completed at the Thurston Bay Station of the Forest Service. Old logging-grades were converted into roads for protection purposes and proposed planting-sites fire-proofed and opened up by truck-trails on old logging-grades.

The activities under the F.D.P. are reported herein in some detail as it is an entirely new departure in the handling of unemployed labour. In November, 1937, a second programme was undertaken, when twenty-five projects were established with accommodation for 2,000 single unemployed and transients, with prospects of a total of 5,000 individuals being employed between that date and May, 1938.

Appreciation should be expressed for the splendid co-operation received from the officials of the Labour Department in the carrying-out of this Forest Development Project.

1936–1937.

Number of projects	21
Enrolled at one time	1,327
Total men employed	2,809
Man-days worked	158,374

THE MULTIPLE USE OF FOREST AREAS.

Intelligent planning for the future economic and social security of British Columbia must take full cognizance of the fact that all the varied uses of her vast forest areas must be correlated and developed to the greatest extent possible. It is not sufficient to think of these forest areas merely in terms of their capacity to produce timber for the wood-using industries, but the relationship between forest-cover, fish and game, and the tourist industry must be recognized. Forest-management must consider the sportsman and the tourist as legitimate users of our forest areas and sources of revenue capable of great expansion. Certain areas undoubtedly possess greater value for these recreational uses than for the cutting of timber and must be developed accordingly. Efforts should be made to develop beauty-spots and to make them available to the tourist. Preservation of the virgin wilderness around some of our lakes will yield lasting benefits to the Province. In this work the Forest Service is already accomplishing something through the forest-development camps placed at its disposal by the Labour Department.

FOREST SURVEYS AND WORKING PLANS.

There are now thirty-nine Provincial Forests in the Province, fifteen on the Coast and twenty-four in the Interior. The Coast Forests comprise 7,290 square miles and contain 41,800 million board-feet of merchantable timber. The Interior Forests total 16,650 square miles in area and contain 21,000 million board-feet of standing timber. No new Forests were created this year.

Seymour Forest.—Maps, estimates, and preliminary management plans were completed for the proposed *Seymour Forest*, which was surveyed in 1936. This area is in the Vancouver Forest District and is located on the Mainland Coast approximately 200 miles north-west of Vancouver. It is recommended for reserve as a permanent Provincial Forest. The Forest unavoidably includes large areas of scrub-covered and barren wastes owing to the nature of the country. The productive areas will not produce as heavy stands of timber as some of the Forests on the Lower Coast; however, they are accessible to tide-water. The value of this Forest will increase when it is necessary to depend on such species as cedar and hemlock to provide the lumber industry with raw materials.

The accessible, stocked areas of the proposed Forest could maintain an annual cut of 16,400,000 F.B.M. of timber of a quality acceptable to existing markets. This yield could

be increased slightly when it becomes possible to log areas at present considered inaccessible. The average annual utilization during the past decade has been 37,000,000 F.B.M., indicating that the Forest is being heavily overcut. The actual output from the Forest, at the time of the survey, was 25,000,000 F.B.M. per annum. The fire risk is considered negligible, given reasonable care in logging and slash-burning, and depletion by forest fires is of little significance.

Natural regeneration is impeded by the rapid growth of salal on the large openings created by machine-logging. Also this type of logging on the steeper, coarse soils does not always leave a seed-bed satisfactory for successful regeneration in this locality and climate.

Logging operations have been confined almost entirely to A-Frame shows with annual outputs varying up to 10,000,000 F.B.M. One motor-truck operation is being opened up at Claydon Bay with an anticipated annual production of 10,000,000 F.B.M.

The Forest, with a total area of 580,870 acres, was found to contain the following:—

Area capable of producing Commercial Timber—

	Acres.	Acres.
Mature timber—		
Accessible	85,510	
Inaccessible	1,460	
		86,970
Immature timber—		
1–10 years old	3,940	
11–20 years old	4,080	
21–40 years old	240	
41–60 years old	90	
61–80 years old	40	
101–120 years old	70	
		8,460
Not satisfactorily reforested—		
Logged	8,710	
Logged and burned	1,520	
Deciduous forest	390	
Unprofitable conifers	18,030	
		28,650
Total sites of productive quality		124,080
Area incapable of producing Commercial Timber—		
Barren, alpine, or scrub-covered		422,350
Swamp and water		34,300
Grass-land		140
Total non-productive sites		456,790
Total area of Forest		580,870

The timber is estimated as follows (over 11 inches, D.B.H.):—

Species.	Accessible.	Total.
	M.B.M.	M.B.M.
Western red cedar	1,067,810	1,076,580
Western hemlock	492,930	505,210
Silver fir (balsam)	257,340	265,300
Sitka spruce	82,220	83,250
Yellow cedar (cypress)	69,130	69,170
Western white pine	200	200
Totals	1,969,630	1,999,710

In addition, there are 125,780 M.B.M. on 18,030 acres of unprofitable conifers (decadent stands of timber of doubtful commercial value).

The accessible Crown timber aggregates 527,360 M.B.M. out of a total of 557,440 M.B.M. The alienated timber is all accessible and totals 1,442,270 M.B.M., of which 1,425,930 M.B.M. is held in timber licences and leases.

E. & N. Railway Land Grant.—The surveys of the *Esquimalt & Nanaimo Railway Land Grant* on Vancouver Island and of the *Lower Arrow Lake Region*, which were commenced in 1936, were completed in 1937. Forest and topographic maps, estimates, and preliminary management reports for these areas are in the course of preparation.

Queen Charlotte Islands.—A survey of the Queen Charlotte Islands was commenced with a view to establishing the Moresby and Graham Forests. The field-work was completed on the proposed *Moresby Forest* and detailed plans and estimates for this area are now being compiled. This survey was greatly accelerated by stereoscopic plotting from 2,500 vertical air photographs, 800 of which were available as a result of an aerial photographic survey undertaken by the Forest Surveys Division, the remainder having been obtained from the Royal Canadian Air Force. It is proposed to continue with a survey on Graham Island during 1938.

Skeena River.—A cruise of the cottonwood on the lower *Skeena River*, between Kwinitsa and Terrace, was made. Prior to the field-work 200 vertical air photographs were taken over the area and from these accurate base maps were plotted showing the forest-cover and physiographic features. As a result it was possible to conduct the field-work with a maximum of efficiency, and at a minimum of cost, in an area which was so badly broken by river-channels that ordinary field methods would have been impracticable. Detailed maps and a report, dealing particularly with the total volume of cottonwood on the area and the volume available for timber-sale purposes, are now being prepared. A cottonwood volume table was compiled in conjunction with this cruise and special studies were made in connection with the rate of growth of cottonwood stands. As no cottonwood volume table was previously available, this one is given below:—

VOLUME TABLE (B.C. LOG RULE).

COTTONWOOD (*Populus trichocarpa*).

Skeena River.

D.B.H. Class (Inches).	Merch. Height above Ground (Feet).	Top Diameter (Inches).		Volume (F.B.M.)
		O.B.	I.B.	
10	40	7.8	7.0	40
12	48	8.7	7.9	120
14	54	9.6	8.8	180
16	59	10.8	9.8	260
18	64	11.7	10.7	380
20	69	12.8	11.6	520
22	72	14.0	12.7	670
24	75	15.4	13.6	880
26	78	16.0	14.5	1,020
28	81	17.0	15.5	1,210
30	84	19.5	16.5	1,430
32	86	20.5	17.5	1,640
34	88	21.4	18.4	1,870
36	90	22.3	19.3	2,110
38	90	23.4	20.2	2,350
40	90	24.4	21.0	2,600
42	90	25.6	22.0	2,850
44	....	26.3	22.7	3,120
46	....	27.2	23.5	3,440
48	....	28.1	24.1	3,770
50	....	29.0	24.6	4,000
52	....	30.0	25.3	4,300
54	....	30.7	25.7	4,600
56	....	31.4	26.0	4,920
58	....	32.0	26.2	5,260
60	....	32.5	26.5	5,570

Volumes based on 8.2 feet sections for 106 trees. Average stump-height, 2.5 feet.
Data over 40-inch class are approximate only.
Volumes quoted are gross. Average cull factors: Defect, 15 per cent.; breakage, 10 per cent.
Total heights omitted, having no relation to merchantable length.

A special *Regeneration Study* was conducted on the logged areas of one of the large operations on Vancouver Island. An intensive investigation was made on 20,000 acres of cut-over land having a logging history dating back to 1921. The purposes of this project were to ascertain the degree of success with which new forest-growth was establishing itself on the area and to determine the factors responsible for the condition found. The proportion of this area which has restocked satisfactorily was found to be much smaller than the average of logged areas on the Lower Coast. Of the entire logged area only 5 per cent. has restocked satisfactorily. After excluding all areas logged or burnt over during the last ten years it was found that only 10 per cent. of the remaining area had restocked satisfactorily. The chief reasons for failure were the complete removal of the timber over large areas, leaving the source of seed too far away, and recurrent fires in the slash. The various factors affecting natural regeneration on the study area, measures which might be undertaken to correct the unsatisfactory condition, and general conclusions and recommendations are dealt with in a report on this project.

The first major *Aerial Photographic Survey* was undertaken by the Forest Surveys Division this year. Following the successful aerial project carried on in conjunction with the survey of the E. & N. Land Grant last year, a definite step was taken towards the organization of an Aerial Surveys Section. A modern camera, the Eagle III. Aircraft, manufactured in London, and accessories, were purchased. This camera has a 5-inch wide-angle Ross lens, is electrically operated, records views on a 5- by 5-inch negative, and in vertical photography covers a gross area of approximately 3.6 square miles on the ground from 10,000 feet above. During the year 2,700 vertical air photographs were taken and are now being plotted. Twenty-five hundred of these were taken over the portions of the Queen Charlotte Islands that had been omitted by the Royal Canadian Air Force operations in 1933. In addition, 200 photographs, covering an area of 200 square miles, were taken in connection with the Skeena River cottonwood cruise. The results of the aerial project were highly satisfactory and definitely demonstrated that the use of aerial photography in forest surveys in British Columbia can be conducted at a cost within limits that are practicable. A complete report on this project is now being prepared.

FOREST RESOURCES INVENTORY.

The Forest Atlas and estimates of the Vancouver Forest District are being revised and brought up to date. Details of this undertaking will be reported next year.

The chief field-work during the year was the location and examination of grazing land in an area of 1,900 square miles of the *Blackwater* and *Euchiniko* river drainages. Grazing areas suitable for cattle-range and land suitable for raising hay were mapped and reported upon. These areas were found to be scattered and amounted to only 89 square miles of useful range and 7 square miles of meadow. No other agricultural land suitable for cultivation was found.

Cards are being prepared for the Electric Accounting Machine to establish a punch-card tabulating system for recording and sorting all the details of the forest inventory. This important advance in technique will render any item or combination of items in the inventory almost immediately available.

AREAS EXAMINED FOR MISCELLANEOUS PURPOSES OF THE "LAND ACT," 1937.

Forest District.	Applications for Crown Grants.		Applications for Grazing and Hay Leases.		Applications for Pre-emption Records.		Applications to Purchase.		Miscellaneous.	
	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
Vancouver	...	...	...	...	5	357	42	3,521	76	1,421
Prince Rupert	...	...	1	1,064	9	1,116	5	731	13	558
Fort Geoge	...	...	7	1,522	10	1,443	13	1,298	10	2,100
Kamloops	1	20	54	13,889	28	3,569	41	4,360	27	2,038
Nelson	...	...	5	729	1	160	28	4,587	7	1,079
Totals	1	20	67	17,204	53	6,645	129	14,497	133	7,196

CLASSIFICATION OF AREAS EXAMINED IN 1937.

Forest District.	Total Area.	Agricultural Land.	Non-agricultural Land.	Merchantable Timber Land.	Estimate of Timber on Merchantable Timber Land.
	Acres.	Acres.	Acres.	Acres.	M.B.M.
Vancouver	4,362	1,230	3,132	183	1,543
Prince Rupert	3,377	904	2,473	18	461
Fort George	6,363	2,842	3,521	128	1,928
Kamloops	22,092	2,876	19,216	8	38
Nelson	6,555	1,868	4,687	127	783
Totals	42,749	9,720	33,029	464	4,753

FOREST RESEARCH.

The scope of the forest-research work undertaken during the past year has been restricted to the maintenance of studies already in progress. Two research foresters were added to the personnel, but the Division still remains understaffed. However, in the near future, a more adequate personnel is anticipated, and this will permit the initiation of new projects.

Improvements.—The Forest Development Project and the Young Men's Forestry Training Plan had crews located at the three established experiment stations, where extensive programmes of improvement-work were carried out. At Cowichan Lake the Station road was improved, a new trail constructed around the shore-line of McKenzie Point, three public camp-sites established, portions of the lake-shore cleared of debris, the boundaries of the North Arm sector delineated and opened up, a system of trails established, and the stand adjacent to the road cleaned of dead and down material for a distance of 100 feet. At Aleza Lake further work was done on the foundations of buildings, a dam constructed, the Station road gravelled and ditches opened, and the trail system maintained. At Green Timbers 8 acres of land were cleared for nursery purposes, considerable work done on the fire-guard, driveways were improved, roads through the plantations improved, a fire lookout tower erected, and two permanent buildings (an office and workshop) were constructed.

Growth and Yield.—The loss of experienced personnel mentioned in the 1936 report has particularly handicapped progress in mensuration studies, so that no new plots were established. The year's work consisted of re-examination of twenty-five plots on the Lower Coast and three in the East Kootenays.

Reforestation.—The adverse weather conditions experienced during the summer of 1935, together with the unusually heavy frost of October, 1936, served to considerably reduce the planting stock available for 1937. Consequently, planting was confined to the Green Timbers plantations, where about 10,000 trees were planted on 10 acres. This brings the total to date for number of trees and acres planted up to 854,088 and 1,160.5, respectively.

With the addition of the 8 acres cleared and put under cultivation during the past year, the nursery area is 14.5 acres, this providing sufficient ground for an annual production of 3,000,000 trees. This objective will not be gained until the spring of 1940, but in the spring of 1938 there will be 222,000 available for planting and in the spring of 1939, approximately 2,000,000.

The 1937 crop of coniferous seed on the Lower Coast was almost a total failure. Douglas fir was particularly poor, both on Vancouver Island and the Lower Fraser Valley. Hemlock and red cedar varied with locality, from no crop at all to fair, but in general the crop was poor. Balsam, on the other hand, had a good crop of cones, but when the seed was extracted it was found to be of lower than average germinative capacity. In contrast to these conditions were the bumper yields of Douglas fir throughout the interior of the Province, and Sitka spruce on the Queen Charlotte Islands.

Publications.—During the year the following publications were made available for distribution:—

(1.) A Pocket Guide to the Trees and Shrubs of British Columbia, by B. G. Griffith. (Revised Edition.)

(2.) Volume, Yield, and Stand Tables for some of the Principal Timber Species of British Columbia. (A 52-page bulletin containing 41 tables and 8 charts.)
(3.) The Development of Unevenaged Stands of Engelmann Spruce and Probable Development of Residual Stands after Logging, by G. H. Barnes.

Co-operation.—The Research Division has supplied specimens and information to numerous schools, both public and high, to various organizations, and to individuals. A lecturer gave a six-week course in general forestry to 65 Boy Scouts of Sidney and Victoria who were desirous of taking the examination for the Forestry Proficiency Badge. The Division co-operated with the B.C. Pulp and Paper Company in the conduct of experimental thinning operations on Holberg Inlet, Quatsino Sound. These experiments promise to divulge some interesting information which will either establish or break down the thesis that thinnings in young hemlock stands are justified economically.

FOREST BRANCH LIBRARY.

In 1932 some 988 text and reference books, bulletins and pamphlets, acquired over a period of years by the various Forest Branch offices, were brought together and indexed to form a small Forest Branch reference library. At the end of 1937 the total number of items had grown to 2,673. Acquisitions consist of a limited number of text and reference books purchased, together with large numbers of bulletins and reports received free of charge, for the most part, from various laboratories, Forest Services, and Research Stations throughout the world. In addition to these the Branch subscribes to some nineteen trade journals and periodicals and an additional thirty-five periodicals of more or less value are received as gifts. All articles in periodicals considered to be of value to the Forest Service are catalogued.

There are at the present time about 12,000 reference cards in the catalogue and about 10,000 cards of forestry material to be found in the Provincial Library.

This small Forest Branch library, confined entirely to forestry subjects, is invaluable for daily reference by the staff. It is not a substitute, of course, for the valuable Provincial Library, the facilities of which are also used by the staff of the Forest Service.

LUMBER TRADE EXTENSION.

The reaction of our lumber export trade of 1937 to circumstances over which we had little control illustrates the uncertainties of a business so dependent upon foreign markets.

At the beginning of the year prospects were very bright, order files were heavy, prices were on the up-grade, and our logging camps were having difficulty in supplying the demand for logs. There was only one shadow on the horizon and that was the shortage of cargo-space. This shadow, however, became a cloud of menacing proportions when by the middle of the year the increase in freight rates alone to the United Kingdom, for instance, was over half the F.A.S. value of the lumber. Illustrated in another way, the rate to South Africa increased 100 per cent. within a year, as compared with a 20-per-cent. increase in the Baltic rates.

In spite of this handicap of high freight rates, with its disrupting influence on the trade and the almost complete cessation of orders from the Orient in the latter part of the year due to the war, 999 million board-feet were shipped overseas, in comparison with 1,043 in the preceding record year of 1936.

The outstanding contributor to the year's business was again the United Kingdom, where, in spite of the freight rates placing us at an increasing disadvantage, we sold within 3 per cent. of the previous year's total. For the first half of the year shipments were far ahead of those of the same period of 1936, partly due, however, to orders placed in the latter part of 1936, but the last four months of 1937 showed a heavy decrease.

Australia was the brightest spot of all, purchasing 26 per cent. more lumber from us than during the preceding year.

Trade with South Africa dropped 20 per cent. Economic conditions were good in that country for the first part of the year, but a bad crash in the stock markets in early summer, high freight rates, and slow deliveries all reacted to our disadvantage.

Other features of our overseas trade were the official approval of hemlock for butter-boxes in Australia, the increasing interest in pre-fabricated houses and cedar lumber in the United Kingdom and in cedar shingles in South Africa; also a doubling of the preference on

Canadian lumber into Jamaica through a change from F.O.B. prices to C.I.F. as a basis of computation.

Following preliminary work in the West Indies field by Major L. R. Andrews, Mr. C. D. Schultz was sent as Timber Commissioner to the West Indies in June. His reports speak very favourably of trade possibilities.

British Columbia secured 62 per cent. of the total Pacific North-west offshore trade in 1937, as compared with 68 per cent. in 1936.

Several factors are working to the disadvantage of our trade overseas, according to the various lumber commissioners. They are drawing to the attention of the lumbermen of this Province that greater care must be used in the sawing and seasoning of our hemlock, which they are doing their best to popularize. They are also emphasizing the bad impression made on our customers by the instability of our prices, part of which is of course due to the fluctuation of freight rates. The public, through its heavy contribution to the cost of this trade-extension work, is directly interested in the efforts of the industry to rectify these undesirable conditions.

It must again be pointed out that the percentage of fir shipped overseas is out of all proportion to its percentage in our standing timber. Our primary object simply must be to sell more hemlock and cedar. Our lack of markets for these two species is seriously affecting the whole economic structure of our lumber industry and the situation will become worse unless a greater demand is created for these two species. The timber commissioners overseas fully recognize this, and their efforts to popularize these species and to point out to the industry how to prepare them for market are to be highly commended. Any expansion in the pulp and paper industry within the Province will have an important balancing effect in the use of hemlock.

WATER-BORNE LUMBER TRADE (IN M.B.M.).

Destination.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	Ten-yr. Ave., 1928–37.
Australia	29,843	41,493	33,076	50,803	125,551	123,733	128,141	129,492	125,448	158,400	94,598
New Zealand	8,531	8,559	6,416	2,579	979	1,300	2,957	3,793	6,072	5,415	4,660
South America	10,304	2,449	1,775	1,354	141	3,642	1,620	4,017	6,328	10,632	4,226
China	16,902	43,323	55,224	53,854	53,342	130,596	108,128	91,232	102,743	47,635	70,298
Japan	219,361	192,412	150,870	138,852	60,032	60,657	80,279	43,080	33,123	30,677	100,934
United Kingdom and Continent	67,076	69,904	98,038	81,356	108,315	271,073	455,695	455,862	666,272	648,364	292,196
South Africa	18,626	15,889	17,686	13,120	5,665	18,213	25,276	28,350	61,133	49,015	24,797
India and Straits Settlements	411	244	241	370	544	917	431	3,415	1,897	2,781	1,125
United States and Atlantic Coast	384,108	351,527	259,094	207,586	79,683	29,528	28,735	62,013	159,904	107,933	167,911
Philippine and Hawaiian Islands	57		123						136	743	105
West Indies and Cuba	8,357	14,347	12,781	7,521	8,240	11,830	13,467	7,133	9,823	9,457	10,930
South Sea Islands	5,496	5,509	3,231	2,527	2,009	2,477	4,475	4,556	10,128	12,304	5,881
Mexico and Central America	334	624	550	479	1,746	1,669	2,410	4,870	2,821	3,748	1,925
Egypt	1,150	4,744		4,195			4,348	4,216	8,040	8,279	3,497
*Belgium				336	79	6,141	2,997	6,265	5,691	4,578	2,669
*Denmark				62			5	2		29	10
*France				242	149	10	48	425	724	875	247
*Germany				154	120	127	105	846	746	2,836	493
*Holland				419	144	302	9	1,870	1,212	1,669	583
*Italy				302	129	351	330	1,869	335	1,023	434
*Norway and Sweden				18			5	8	24	113	17
Spain					16			467	64		54
Foreign, unclassified		50,494	73,195		6	34	4	208	329	241	12,452
Totals	765,556	801,518	712,300	566,129	446,890	662,600	859,465	853,979	1,202,994	1,107,377	797,880

* Previously included with United Kingdom.

THE FOREST INDUSTRIES.

ESTIMATED VALUE OF PRODUCTION, INCLUDING LOADING AND FREIGHT WITHIN THE PROVINCE.

Product.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	Ten-year Average, 1928–37.
Lumber	$16,738,000	$13,349,000	$15,457,000	$20,377,000	$24,094,000	$36,160,000	$40,638,000	$29,807,200
Pulp and paper	13,508,000	11,156,000	10,852,000	12,373,000	12,414,000	14,950,000	17,214,000	14,014,200
Shingles	2,721,000	2,805,000	4,500,000	4,375,000	8,750,000	7,800,000	6,875,000	6,028,700
Boxes	1,315,000	1,100,000	1,313,000	1,632,000	1,720,000	1,629,000	2,122,000	1,805,600
Doors					1,693,000	2,718,000	2,971,000	738,200
Piles, poles, and mine-props	2,453,000	772,000	450,000	487,000	810,000	1,434,000	2,346,000	2,366,200
Cordwood, fence-posts, and lagging	1,405,000	1,576,000	1,850,000	1,335,000	1,453,000	1,489,000	1,459,000	1,553,000
Ties, railway	1,044,000	502,000	250,000	485,000	764,000	623,000	560,000	947,000
Additional value contributed by the wood-using industry	1,350,000	1,014,000	1,200,000	1,320,000	1,300,000	1,350,000	1,500,000	1,572,100
Laths and other miscellaneous products	1,500,000	1,125,000	1,000,000	1,100,000	1,100,000	1,200,000	1,400,000	1,442,500
Logs exported	2,370,000	1,730,000	2,228,000	1,931,000	2,820,000	2,646,000	3,782,000	2,770,300
Pulp-wood exported	43,000	28,000	55,000	46,000	23,000	11,000	5,000	41,800
Totals	$44,447,000	$35,157,000	$39,155,000	$45,461,000	$56,941,000	$72,010,000	$80,872,000	$63,086,800

PAPER (IN TONS).

Product.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	Ten-year Average, 1928–37.
Newsprint	217,562	205,050	237,107	267,406	262,123	276,710	264,136	238,142
Other papers	17,709	24,051	23,492	26,777	33,287	41,443	53,026	27,568

In addition to the 301,550 tons of pulp manufactured into paper in the Province, 87,000 tons were shipped out of the Province during the year.

TOTAL AMOUNT OF TIMBER SCALED IN BRITISH COLUMBIA DURING THE YEARS 1936–37 (IN F.B.M.).

Forest District.	1936.	1937.	Gain.
Vancouver	2,544,446,912	2,693,167,199	148,720,287
Prince Rupert	160,971,839	179,029,678	18,057,839
Totals, Coast	2,705,418,751	2,872,196,877	166,778,126
Fort George	53,691,046	66,058,332	12,367,286
Kamloops	123,421,482	147,820,267	24,398,785
Nelson	138,241,915	155,840,164	17,598,249
Totals, Interior	315,354,443	369,718,763	54,364,320
Totals for Province	3,020,773,194	3,241,915,640	221,142,446

Species cut (in F.B.M.).

Forest District.	Fir.	Cedar.	Spruce.	Hemlock.	Balsam.	Yellow Pine.	White Pine.	Lodgepole Pine.	Larch.	Cotton-wood.	Miscel-laneous.	Totals.
Vancouver	1,519,654,500	499,685,714	27,628,084	522,635,236	84,355,502	.....	21,457,258	.....	.....	2,720,595	14,530,310	2,693,167,199
Prince Rupert	6,709,113	22,562,651	73,912,287	45,645,477	8,301,571	.....	.....	.....	.....	157,148	349,641	157,637,888
Totals, Coast	1,526,363,613	522,248,365	101,540,371	568,280,713	93,157,073	.....	21,457,258	.....	.....	2,877,743	14,879,951	2,850,805,087
Prince Rupert	385,963	4,354,636	2,087,601	1,554,627	2,160	.....	.....	12,498,345	.....	.....	508,458	21,391,790
Fort George	6,511,923	949,248	45,009,719	.....	95,377	.....	.....	8,235,532	.....	.....	5,256,533	66,058,332
Kamloops	60,072,656	34,724,902	3,197,884	139,520	9,741	31,955,802	2,701,666	85,898	1,030,850	284,842	13,616,506	147,820,267
Nelson	24,414,841	19,860,606	28,051,632	5,587,793	636,446	11,812,088	11,203,023	2,985,276	39,929,507	671,926	10,687,026	155,840,164
Totals, Interior	91,385,383	59,889,392	78,346,836	7,281,940	743,724	43,767,890	13,904,689	23,805,051	40,960,357	956,768	30,068,523	391,110,553
Grand totals, 1937	1,617,748,996	582,137,757	179,887,207	575,562,653	93,900,797	43,767,890	35,361,947	23,805,051	40,960,357	3,834,511	44,948,474	3,241,915,640
Grand totals, 1936	1,590,145,329	551,348,174	149,037,950	464,588,680	79,960,739	36,836,428	24,789,625	27,109,138	40,942,920	5,453,226	50,560,985	3,020,773,194
Grand totals, 1935	1,339,026,242	477,362,816	125,060,677	428,684,859	88,647,694	33,216,860	27,982,161	34,775,415	46,798,137	3,008,870	44,724,664	2,649,288,395
Grand totals, 1934	1,161,212,111	335,779,926	132,327,306	342,766,236	77,442,211	39,573,745	17,136,556	19,475,917	30,222,468	4,052,857	54,802,536	2,214,791,869
Grand totals, 1933	873,187,188	374,247,934	86,715,876	238,472,893	68,203,263	22,005,856	22,186,768	7,157,309	31,094,619	4,468,131	170,841,227	1,898,581,064
Grand totals, 1932	752,558,169	319,086,978	106,361,793	245,169,186	54,282,274	13,367,227	17,992,369	7,471,122	21,470,125	2,941,992	70,757,226	1,611,458,461
Grand totals, 1931	997,513,398	356,478,825	123,056,421	267,283,560	45,153,077	26,109,228	27,006,894	38,555,460	17,700,108	4,029,782	45,517,520	1,948,404,273
Grand totals, 1930	1,319,093,565	570,071,915	185,696,765	329,447,130	65,513,782	30,463,015	28,029,526	55,368,482	20,585,633	2,912,598	56,569,927	2,663,752,338
Ten-year Average, 1928–37	1,291,595,074	505,169,039	151,307,559	363,998,714	71,334,407	31,017,257	24,529,453	36,631,449	31,323,854	4,064,462	69,224,548	2,580,195,816

Total Scale segregated, showing Land Status (in F.B.M.).

Forest District.	Timber Licences.	Timber Leases.	Hand-loggers' Licences.	Timber-sales.	Pre-emp-tions, S.R., and Miscel-laneous.	Crown Grants.				Dominion Lands.	Totals.
						To 1887.	1887–1906.	1906–1914.	1914 to Date.		
Vancouver	748,407,121	524,434,488	.....	225,492,854	24,280,391	1,053,493,682	43,778,103	38,608,530	20,147,309	14,524,721	2,693,167,199
Prince Rupert, Coast	85,853,270	10,843,549	3,026,150	48,739,278	985,378	.....	3,780,735	786,808	1,204,986	2,417,734	157,637,888
Prince Rupert, Interior	676,823	.....	.....	15,688,229	229,935	.....	570	2,975,660	1,781,858	38,715	21,391,790
Fort George	14,289,911	.....	.....	39,761,240	7,156,404	12,120	.....	3,048,040	1,790,617	.....	66,058,332
Kamloops	28,044,820	.....	.....	74,847,428	4,387,516	12,488,102	4,193,178	9,886,623	12,666,620	1,305,980	147,820,267
Nelson	15,712,990	.....	.....	41,854,507	8,243,615	999,804	77,725,111	5,687,090	5,617,047	.....	155,840,164
Totals, 1937	892,984,935	535,278,037	3,026,150	446,383,536	45,283,239	1,066,993,708	129,477,697	60,992,751	43,208,437	18,287,150	3,241,915,640
Totals, 1936	817,358,715	659,196,593	3,963,393	361,804,289	26,314,600	933,760,894	102,814,341	56,461,309	48,552,539	10,546,521	3,020,773,194
Totals, 1935	749,516,819	549,472,826	5,324,156	269,381,544	28,073,266	817,442,350	109,307,343	71,557,217	40,560,673	8,652,201	2,649,288,395
Totals, 1934	607,248,479	401,366,932	7,084,960	247,602,363	29,349,240	707,095,539	103,412,413	55,048,755	37,247,321	19,335,867	2,214,791,869
Totals, 1933	506,071,513	329,648,907	8,366,034	160,558,274	25,327,310	692,183,179	116,367,136	25,297,282	27,923,268	6,838,161	1,898,581,064
Totals, 1932	399,082,165	390,494,128	5,303,122	198,277,128	24,259,207	440,264,407	70,534,985	28,558,367	37,982,900	16,702,052	1,611,458,461
Totals, 1931	283,982,547	386,584,819	4,938,797	238,645,632	35,381,654	647,262,567	165,875,691	41,867,865	31,120,290	112,744,411	1,948,404,273
Totals, 1930	474,717,322	420,727,159	5,413,150	321,230,000	25,830,560	888,519,895	226,834,133	69,744,896	44,489,545	186,245,678	2,663,752,338
Ten-year average, 1928–37	590,773,184	445,747,734	5,457,799	295,187,259	30,545,563	852,043,204	157,663,673	59,870,424	43,381,367	99,525,610	2,580,195,817

Timber from lands in the former Dominion Government Railway Belt which has passed over to the jurisdiction of this Province is included under the various land status headings shown above.

Only timber from Indian Reserves and other lands still under the jurisdiction of the Dominion Government is shown under the heading "Dominion Lands."

Timber scaled in British Columbia in 1937 (by Months and Districts).

Month.	Vancouver.	Prince Rupert, Coast.	Prince Rupert, Interior.	Fort George.	Kamloops.	Nelson.	Total, F.B.M.	Total Lineal Feet.	Total Cords.	Total Hewn Ties.
January	F.B.M. 106,534,749	245,685	112,978	1,226,758	2,906,095	3,975,439	115,001,704	695,717	.....	.....
,,	lineal ft. 207,060	9,814	32,901	48,559	222,308	175,075	.....	.....	10,601	21,502
,,	cords 4,078	11	63	1,329	2,454	2,666	.....	.....	.....	.....
,,	hewn ties	.....	8,246	.....	5,896	7,360	.....	.....	.....	.....
February	F.B.M. 94,075,225	83,053	198,768	1,080,663	2,167,633	4,991,855	102,597,087	645,795	7,873	78,048
,,	lineal ft. 187,770	.....	214,752	21,096	110,105	112,072	.....	.....	.....	.....
,,	cords 1,716	.....	.....	1,226	1,635	3,296	.....	.....	.....	.....
,,	hewn ties	.....	31,053	6,986	29,240	10,769	.....	.....	.....	.....
March	F.B.M. 145,239,728	129,866	352,345	3,768,474	3,226,203	5,626,441	158,343,059	947,478	10,013	35,949
,,	lineal ft. 375,112	.....	227,305	28,765	302,639	13,597	.....	.....	.....	.....
,,	cords 3,081	.....	140	765	4,016	2,011	.....	.....	.....	.....
,,	hewn ties 1,674	.....	6,102	13,621	8,403	6,149	.....	.....	.....	.....
April	F.B.M. 206,458,045	2,706,804	609,095	1,442,163	4,898,910	6,994,832	223,109,849	847,531	10,845	79,678
,,	lineal ft. 290,492	.....	52,080	6,857	380,987	114,085	.....	.....	.....	.....
,,	cords 6,427	.....	20	1,207	892	2,299	.....	.....	.....	.....
,,	hewn ties 6,383	.....	5,895	38,360	23,624	5,416	.....	.....	.....	.....
May	F.B.M. 280,738,310	15,874,408	729,709	1,611,389	7,632,584	8,150,568	314,736,968	1,283,334	15,081	146,302
,,	lineal ft. 706,828	16,139	10,315	25,230	384,252	140,570	.....	.....	.....	.....
,,	cords 9,610	35	11	358	2,950	2,117	.....	.....	.....	.....
,,	hewn ties 1,000	.....	22,933	22,600	75,617	22,152	.....	.....	.....	.....
June	F.B.M. 318,890,254	17,485,034	399,760	4,163,333	7,559,690	13,770,781	362,268,902	1,586,095	12,816	.....
,,	lineal ft. 707,209	26,470	300	36,335	528,437	267,344	.....	.....	.....	.....
,,	cords 7,793	.....	54	94	1,910	2,165	.....	.....	.....	.....
,,	hewn ties 6,383	.....	15,466	12,206	61,538	10,730	.....	.....	.....	.....
July	F.B.M. 255,572,371	23,763,120	1,624,670	6,808,126	8,912,988	12,895,546	308,576,821	1,918,172	16,267	139,387
,,	lineal ft. 590,771	60,369	258,179	123,523	624,050	261,280	.....	.....	.....	.....
,,	cords 11,126	195	193	957	2,100	1,676	.....	.....	.....	.....
,,	hewn ties	.....	13,592	13,205	63,473	55,821	.....	.....	.....	.....
August	F.B.M. 236,647,582	23,718,185	670,856	7,098,529	11,857,028	21,517,424	306,106,116	2,769,318	14,506	109,357
,,	lineal ft. 672,199	36,746	12,795	39,034	1,458,088	531,742	.....	.....	.....	.....
,,	cords 10,511	180	108	506	1,389	1,881	.....	.....	.....	.....
,,	hewn ties 400	1,518	26,593	15,427	27,295	52,357	.....	.....	.....	.....
September	F.B.M. 281,160,581	21,127,527	670,856	7,098,529	10,359,931	14,097,791	334,515,215	3,007,697	15,560	104,575
,,	lineal ft. 973,090	27,386	12,795	39,034	1,391,799	563,393	.....	.....	.....	.....
,,	cords 11,153	48	108	506	2,392	1,853	.....	.....	.....	.....
,,	hewn ties 420	.....	26,593	15,427	36,027	26,208	.....	.....	.....	.....
October	F.B.M. 256,092,972	23,518,614	233,274	6,644,043	12,092,382	14,373,570	312,954,555	3,038,677	16,267	174,925
,,	lineal ft. 401,806	38,435	167,955	76,940	1,801,573	551,968	.....	.....	.....	.....
,,	cords 8,741	235	125	300	3,261	3,605	.....	.....	.....	.....
,,	hewn ties 87,161	237	14,201	16,846	37,083	18,497	.....	.....	.....	.....
November	F.B.M. 234,892,338	13,703,647	862,006	3,701,940	7,221,359	11,058,346	271,439,636	3,622,495	12,442	57,843
,,	lineal ft. 547,421	4,368	184,040	64,265	2,328,634	498,767	.....	.....	.....	.....
,,	cords 6,243	4	61	854	1,949	3,331	.....	.....	.....	.....
,,	hewn ties 687	.....	33,703	43	16,943	6,467	.....	.....	.....	.....
December	F.B.M. 197,133,063	14,154,142	183,012	2,609,215	6,501,710	4,321,542	224,902,684	1,763,819	14,043	53,914
,,	lineal ft. 395,489	3,340	141,604	25,950	1,078,146	109,290	.....	.....	.....	.....
,,	cords 6,783	44	5	814	3,395	3,002	.....	.....	.....	.....
,,	hewn ties 1,203	.....	31,111	100	16,014	5,486	.....	.....	.....	.....
Totals for year	F.B.M. 2,613,435,218	156,510,087	6,984,181	51,512,862	85,336,413	121,774,135	3,035,552,896	22,116,128	155,494	1,191,484
,,	lineal ft. 6,055,247	223,067	1,310,383	578,970	10,609,078	3,339,383	.....	.....	.....	.....
,,	cords 87,262	752	843	8,892	28,343	29,402	.....	.....	.....	.....
,,	hewn ties 100,906	1,755	251,374	209,034	401,153	227,212	.....	.....	.....	.....

Total scale in F.B.M. = 3,241,915,640.

Logging Inspection.

Forest District.	Operations. Timber-sales.	Hand-loggers' Licences.	Leases, Licences, Crown Grants, and Pre-emptions.	Totals.	No. of Inspections.
Vancouver	638	1	846	1,485	3,559
Prince Rupert	362	45	168	575	1,877
Fort George	311	.....	165	476	1,038
Kamloops	686	.....	447	1,133	2,709
Nelson	407	.....	306	713	2,324
Totals, 1937	2,404	46	1,932	4,382	11,507
Totals, 1936	2,354	35	1,883	4,272	11,138
Totals, 1935	2,074	59	1,660	3,793	10,081
Totals, 1934	1,603	87	1,546	3,236	9,486
Totals, 1933	1,237	67	1,425	2,729	8,121
Totals, 1932	1,124	37	1,316	2,477	7,273
Totals, 1931	1,562	92	1,675	3,329	8,969
Totals, 1930	1,932	100	1,862	3,894	8,859
Ten-year average, 1928–37	1,782	67	1,732	3,581	9,453

Trespasses.

Forest District.	No. of Cases.	Areas cut over (Acres).	Quantity cut. Feet B.M.	Lineal Feet.	Cords.	Ties.	Christmas Trees.	No. of Resulting Seizures.	Amount.
Vancouver	53	363	7,109,596	62,880	928	60	21,213	....	$13,672.50
Prince Rupert	10	18	141,885	2,150	40	824	.....	....	308.57
Fort George	32	80	233,298	17,790	194	200	.....	1	481.09
Kamloops	32	119	210,842	15,870	93	956	4,810	2	786.36
Nelson	29	567	544,192	45,170	352	92	8,994	4	2,191.00
Totals, 1937	156	1,147	8,239,813	143,860	1,607	2,132	35,017	7	$17,439.52
Totals, 1936	153	501	2,067,130	75,272	1,632	2,452	.....	13	$5,243.00
Totals, 1935	121	555	3,043,486	50,965	1,283	14,078	.....	3	$6,077.58
Totals, 1934	101	720	3,270,608	30,555	1,385	4,825	.....	6	$5,401.05
Totals, 1933	70	155	1,578,108	41,689	1,413	3,807	.....	2	$2,727.81
Totals, 1932	95	368	767,896	35,484	2,140	9,265	.....	14	$3,490.84
Totals, 1931	84	397	1,579,465	118,704	1,048	12,425	.....	2	$5,633.68
Totals, 1930	96	1,000	969,351	165,729	1,457	9,612	.....	4	$7,534.01
Ten-year average, 1928–37	107	608	2,836,721	84,952	1,725	8,110	.....	6	$7,676.20

Pre-emption Inspections, 1937.

Pre-emption records examined by districts are:—

Vancouver	304
Prince Rupert	180
Fort George	608
Kamloops	737
Nelson	199
Total	2,028

Areas cruised for Timber-sales.

Forest District.	Number cruised.	Acreage.	Saw-timber (M.B.M.).	Poles and Piles (Lineal Ft.).	Shingle-bolts and Cordwood (Cords).	Railway-ties (No.).	Car Stakes and Posts (No.).
Vancouver	379	70,655	306,709	1,072,726	75,918	4,034	1,400
Prince Rupert	252	46,954	99,272	1,465,100	1,938	217,555	9,700
Fort George	201	27,476	72,433	807,211	11,181	146,797	16,000
Kamloops	374	71,629	90,732	4,435,934	32,972	306,578	.....
Nelson	265	61,672	64,070	1,877,029	18,811	78,444	133,350
Totals, 1937	1,471	278,386	633,216	9,658,000	140,820	753,408	160,450
Totals, 1936	1,415	252,035	464,402	8,535,045	148,606	1,083,746	63,200
Totals, 1935	1,319	238,952	398,884	5,674,908	114,753	1,164,454	74,700
Totals, 1934	1,331	223,391	356,264	2,856,619	80,101	1,235,766	73,766
Totals, 1933	942	169,831	186,418	1,620,112	95,233	549,976	174,861
Totals, 1932	875	144,769	202,421	1,759,905	68,414	488,655	69,900
Totals, 1931	818	145,214	297,825	2,629,054	62,680	664,413	142,400
Totals, 1930	943	197,065	526,261	10,345,822	26,431	731,640	620,100
Ten-year average, 1928–37	1,128	206,322	432,020	6,574,666	79,793	1,003,377	201,275

Timber-sales awarded by Districts, 1937.

Forest District.	No. of Sales.	Acreage.	Saw-timber (Ft. B.M.).	Poles and Piles (Lin. Ft.).	No. of Posts.	No. of Cords.	No. of Ties.	Estimated Revenue.
Vancouver	398	77,414	284,112,000	723,292	.....	28,532	5,870	$689,312.04
Prince Rupert	257	45,938	35,398,000	2,042,800	12,400	5,751	259,450	116,444.14
Prince George	174	27,991	40,828,000	771,105	.....	8,445	114,866	113,948.86
Kamloops	389	73,542	48,495,000	5,281,363	188,550	25,027	194,529	229,854.97
Nelson	231	54,103	41,965,000	1,046,413	163,000	54,388	69,508	121,915.19
Totals, 1937	1,449	278,988	450,798,000	9,864,973	363,950	122,143	644,223	$1,271,475.20
Totals, 1936	1,443	252,624	358,804,000	8,332,542	235,600	122,979	823,181	$1,082,793.87
Totals, 1935	1,357	231,958	260,831,000	5,408,377	308,825	101,966	1,200,582	$762,427.04
Totals, 1934	1,324	219,969	250,629,000	2,721,540	316,910	67,902	894,970	$705,038.99
Totals, 1933	948	190,794	145,696,000	2,490,244	295,905	76,777	432,513	$450,559.16
Totals, 1932	836	134,868	181,470,000	1,746,616	161,600	54,154	423,676	$450,528.10
Totals, 1931	842	148,523	217,474,000	2,272,082	173,300	41,032	606,160	$624,596.27
Ten-year average, 1928–37	1,107	203,091	328,241,076	5,869,337	350,830	67,887	902,191	$928,927.45

Average Sale Price for Species.

Sawn Timber.	Figures for 1937.		Figures for 1936.		Ten-year Average, 1928–37.	
	Board-feet.	Price per M.	Board-feet.	Price per M.	Board-feet.	Price per M.
Douglas fir	174,804,000	$1.31	156,240,000	$1.16	874,274,000	$1.28
Cedar	61,853,000	1.16	47,561,000	1.02	343,176,000	1.27
Spruce	68,518,000	1.16	35,963,000	1.21	714,342,000	1.39
Hemlock	78,607,000	.70	59,818,000	.65	474,890,000	.76
Balsam	25,963,000	.70	11,557,000	.69	155,971,000	.79
White pine	7,644,000	1.95	14,231,000	1.57	69,109,000	1.98
Western soft pine	17,313,000	1.59	19,598,000	1.42	139,401,000	1.42
Tamarack	9,350,000	.77	9,083,000	.68	51,184,000	1.00
Other species	6,746,000	.85	4,753,000	.75	74,007,000	.89
Totals	450,798,000	$1.13	358,804,000	$1.12	2,896,354,000	$1.21

Timber cut from Timber-sales during 1937.

Forest District.	Feet B.M.	Lineal Feet.	Cords.	Ties.	Posts.
Vancouver	223,728,353	674,589	24,343	5,781	.....
Prince Rupert	51,989,038	1,396,825	974	211,512	23,940
Prince George	31,693,103	375,295	4,673	137,418	28,916
Kamloops	43,691,799	4,751,088	11,596	215,486	43,348
Nelson	33,525,974	1,405,785	8,395	154,286	101,655
Totals, 1937	384,628,267	8,603,582	49,981	724,483	197,859
Totals, 1936	286,001,433	5,241,658	62,763	813,764	154,630
Totals, 1935	193,788,636	3,540,576	38,438	851,342	149,959
Totals, 1934	199,895,549	1,694,470	36,209	503,266	84,312
Totals, 1933	122,275,912	1,337,497	35,841	212,824	164,586
Totals, 1932	165,666,929	1,583,955	30,647	258,284	79,885
Totals, 1931	177,172,765	5,697,152	15,499	662,120	255,545
Ten-year average, 1928–37	222,567,438	5,529,746	33,561	863,709	218,381

Saw and Shingle Mills of the Province.

Forest District.	Operating.				Shut Down.			
	Sawmills.		Shingle-mills.		Sawmills.		Shingle-mills.	
	No.	Estimated Daily Capacity, M.B.M.	No.	Estimated Daily Capacity, Shingles, M.	No.	Estimated Daily Capacity, M.B.M.	No.	Estimated Daily Capacity, Shingles, M.
Vancouver	179	7,711	65	8,881	40	664	12	364
Prince Rupert	43	512	4	79	17	400	2	13
Fort George	44	684	....	.....	19	172	....	.....
Kamloops	94	1,003	4	64	39	167	1	5
Nelson	74	1,132	7	100	16	282	1	20
Totals, 1937	434	11,042	80	9,124	131	1,685	16	402
Totals, 1936	410	11,401	86	8,859	122	1,699	10	315
Totals, 1935	384	9,822	93	8,492	96	1,962	16	1,231
Totals, 1934	349	9,152	82	7,311	129	2,999	13	1,228
Totals, 1933	295	8,715	78	7,325	134	3,632	22	1,652
Totals, 1932	293	7,641	45	6,813	139	4,621	13	1,470
Totals, 1931	334	10,167	46	7,470	158	4,109	19	1,871
Totals, 1930	301	11,020	43	7,164	141	3,204	17	1,695
Ten-year average, 1928–37	346	10,277	66	7,872	126	2,857	15	1,430

Export of Logs (in F.B.M.).

Species.	Grade No. 1.	Grade No. 2.	Grade No. 3.	Ungraded.	Totals.
Fir	4,204,570	99,262,982	48,807,396	.....	152,274,948
Cedar	660,960	11,320,223	11,940,174	.....	23,921,357
Spruce	58,768	4,214,854	4,791,300	.....	9,064,922
Cottonwood	.....	193,158	1,072,348	.....	1,265,506
Hemlock	.....	.....	.....	75,259,705	75,259,705
Balsam	.....	.....	.....	4,299,275	4,299,275
White pine	.....	.....	.....	2,492,985	2,492,985
Larch	.....	.....	.....	409,850	409,850
Lodgepole pine	.....	.....	.....	215,000	215,000
Miscellaneous	.....	.....	.....	1,270,546	1,270,546
Totals, 1937	4,924,298	114,991,217	66,611,218	83,947,361	270,474,094
Totals, 1936	4,028,567	107,007,342	49,061,362	58,731,564	218,828,835
Totals, 1935	8,766,098	129,029,692	56,979,194	40,516,782	235,291,766
Totals, 1934	10,489,155	89,831,736	43,416,151	28,998,709	172,735,751
Totals, 1933	16,941,207	119,089,573 *	59,215,094	13,694,960	208,940,834
Totals, 1932	18,572,020	87,223,114	44,380,166	15,589,383	165,764,683
Totals, 1931	12,886,187	106,331,594	51,909,961	49,048,420	220,176,162
Totals, 1930	11,571,481	86,502,990	40,147,841	34,696,715	172,919,027
Ten-year average, 1928–37	12,175,740	108,010,400	51,971,812	39,250,741	211,408,693

see note p. 1259

Shipments of Poles, Piling, Mine-props, Fence-posts, Railway-ties, etc.

Forest District.	Quantity Exported.	Approximate Value, F.O.B.	Where Marketed.		
			United States.	Canada.	Orient.
Vancouver—					
Cedar poles ..... lineal ft.	4,801,132	$480,100	4,801,132	.....	.....
Fir piling ..... lineal ft.	184,049	25,700	163,139	.....	20,910
Car stakes and stickers ..... cords	58	700	58	.....	.....
Pulp-wood ..... cords	1,027	5,100	1,027	.....	.....
Cedar shakes ..... cords	211	3,800	211	.....	.....
Fence-posts ..... cords	4	40	4	.....	.....
Shingle-bolts ..... cords	1	10	1	.....	.....
Cordwood ..... cords	822	3,300	822	.....	.....
Prince Rupert—					
Poles and piling ..... lineal ft.	1,259,728	106,378	615,195	644,533	.....
Hewn railway-ties ..... No.	129,109	68,349	.....	129,109	.....
Fence-posts ..... No.	10,931	2,567	.....	10,931	.....
Fort George—					
Poles and piling ..... lineal ft.	259,336	20,746	206,815	52,521	.....
Fence-posts ..... cords	89	534	7	82	.....
Hewn railway-ties ..... No.	111,670	45,104	.....	111,670	.....
Mine-props ..... cords	80	640	.....	80	.....
Cordwood ..... cords	16	96	.....	16	.....
Kamloops—					
Poles and piling ..... lineal ft.	9,897,373	1,187,684	9,796,568	100,805	.....
Fence-posts ..... cords	394	3,285	.....	394	.....
Mine-timbers ..... lineal ft.	28,710	1,635	.....	28,710	.....
Hewn railway-ties ..... No.	261,865	123,076	.....	261,865	.....
Nelson—					
Poles and piling ..... lineal ft.	3,267,108	325,470	3,043,389	223,719	.....
Fence-posts ..... cords	6,798	54,384	1,307	5,491	.....
Mine-props ..... cords	5,075	40,600	.....	5,075	.....
Hewn railway-ties ..... No.	221,637	110,818	4,275	217,362	.....
Total value, 1937	.....	$2,610,116	.....	.....	.....
Total value, 1936	.....	$1,655,584	.....	.....	.....

TIMBER-MARKING.

Timber-marks issued for the Years 1935, 1936, and 1937.

	1935.	1936.	1937.
Old Crown grants	217	267	298
Crown grants, 1887–1906	72	85	86
Crown grants, 1906–1914	82	102	129
Section 53A, "Forest Act"	286	285	282
Stumpage reservations	82	73	69
Pre-emptions under sections 28 and 29, "Land Act"	6	5	3
Timber berths	14	17	9
Indian reserves	16	13	18
Timber-sales	1,348	1,443	1,451
Hand-loggers	8	11	4
Special marks	3	5	1
Pulp leases	....	2	1
Pulp licences	7	2	1
Totals	2,141	2,310	2,352
Transfers and changes of marks	221	264	339

DRAUGHTING OFFICE, FOREST BRANCH.

Month.	Number of Tracings Made.					Blue-prints from Reference Maps.
	Timber-sales.	Timber-marks.	Examination Sketches.	Miscel-laneous.	Totals.	
January	17	105	7	27	156	7
February	16	76	13	25	130	3
March	21	81	11	63	176	9
April	31	148	35	52	266	15
May	12	102	17	75	206	14
June	14	113	46	31	204	4
July	7	117	54	39	217	3
August	23	103	53	21	200	9
September	36	88	44	21	189	2
October	21	92	41	17	171	3
November	26	73	50	41	190	3
December	34	104	23	24	185	...
Totals	258	1,202	394	436	2,290	72

CROWN-GRANTED TIMBER LANDS.

	Area of Private Timber Lands (Acres).	Average Value per Acre.
1921	845,111	10.33
1922	887,980	11.99
1923	883,344	11.62
1924	654,668	15.22
1925	654,016	40.61
1926	688,372	39.77
1927	690,438	39.01
1928	671,131	38.62
1929	644,011	38.41
1930	629,156	44.74
1931	602,086	43.77
1932	552,007	43.73
1933	567,731	41.18
1934	557,481	37.25
1935	535,918	37.13
1936	515,924	36.61
1937	* 743,109	23.32

* Explanation p 1608 - 1943.

The extent and value of timber land in the various assessment districts are shown by the following table:—

Assessment District.	Acreage, 1937.	Increase or Decrease in Acreage over 1936.	Average Value per Acre.	Change in Value per Acre since 1936.
Alberni	78,547	+ 6,742	46.14	—14.71
Comox	129,983	+ 36,056	30.34	—12.48
Cowichan	90,040	+ 31,455	40.45	—22.77
Fort Steele	39,742	+ 8,068	5.49	— 3.79
Galiano Island	328	*	14.99	*
Golden	10,713	— 3,641	7.03	+ 0.71
Kettle River	2,595	— 6,424	7.92	+ 2.08
Nanaimo	83,179	+ 8,938	36.30	—10.69
Nelson	3,330	— 849	6.10	— 0.04
Prince George	12,397	+ 46	18.55	— 0.30
Prince Rupert	22,464	— 377	17.38	— 0.41
Revelstoke	37,345	*	13.91	— 0.08
Slocan	199,212	+140,268	2.16	— 5.15
Vancouver	1,474	+ 264	48.07	—10.48
Victoria	31,760	+ 6,639	26.14	— 9.24
Totals	743,109	+227,185	23.32	—12.74

* No change.

FOREST FINANCE.

For years past the Forest Branch has contented itself under this heading with a few lines of comment noting collections and expenditures which might better be labelled "Forest Branch Accounts." Forest Finance covers a wide economic field of outstanding importance to British Columbia in which direct Provincial revenue and administrative expenditures are only details of relatively minor importance. The forests constitute our most valuable natural resource, and their utilization our greatest source of private and public income.

The average annual value of production within the Province in our primary industries is reported by the Economic Council of British Columbia to be in:—

	Million Dollars.
Fisheries	17.7
Agriculture	47.0
Mining	48.6
Forests	63.3

There are other values in our Provincial income dollar of course, but practically all depend in the final analysis on these primary industries. These, the best estimates available, then, may be taken as fairly accurately apportioning our income, which, it appears, is derived from:—

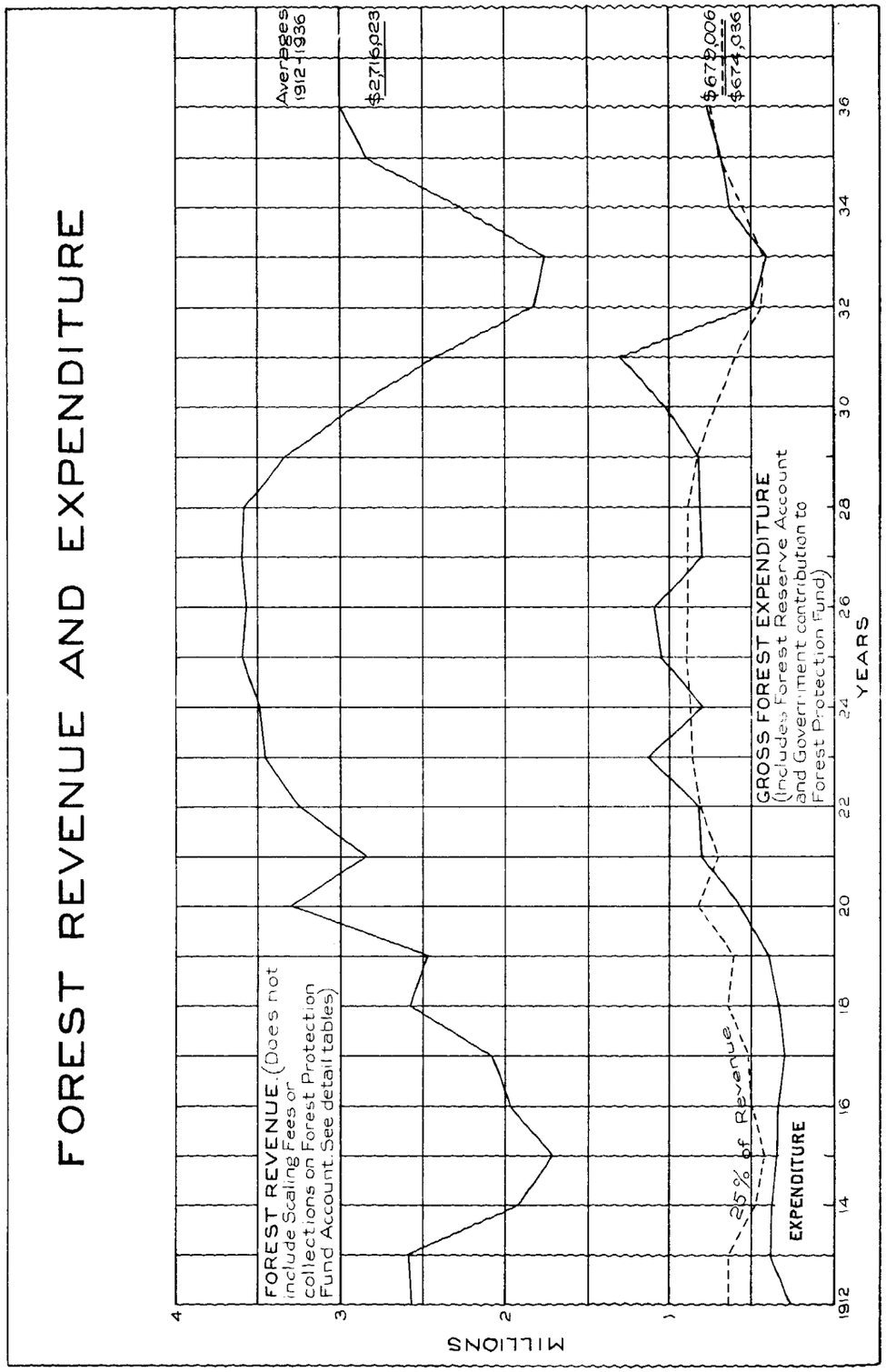
Fisheries	$0.10
Agriculture	.27
Mining	.27
Forests	.36
	$1.00

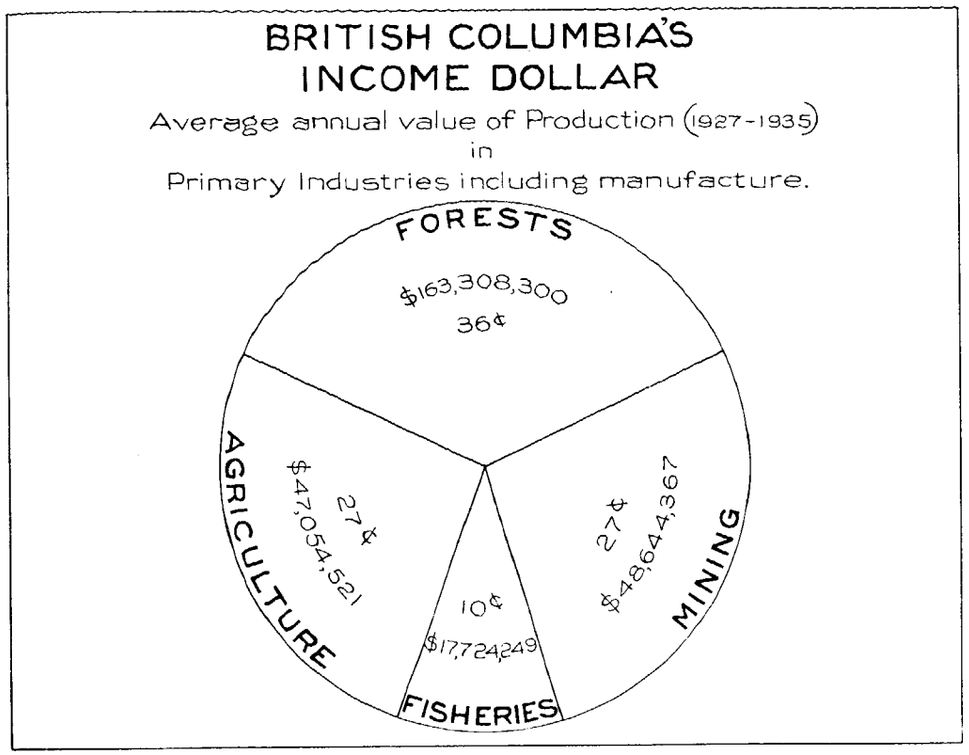
"Forest Finance," therefore, is a matter of about 36 per cent. of our annual income, under existing conditions, with all that it involves in business, employment, and public revenue, dwarfing direct forest revenue to comparative insignificance. This forest wealth, on which we depend for 36 per cent. of our currently produced wealth, is renewable and capable of being maintained. Without carefully planned maintenance it is easily destroyed. As in the case of any business undertaking, a certain part of income must be ploughed back into the forest if the forest wealth is to be maintained unimpaired. This maintenance fund in British Columbia consists of that portion of direct forest revenue expended on forest administration, plus sums spent on protection by private interests which have some bearing on the general forest picture, all of which are detailed in the following pages.

"Direct Forest Revenue" as reported herein consists of income collected exclusively from the forest activities by the Forest Service. Taxation on Crown-granted timber lands is shown as a supplementary item in one table but is not considered to be "Direct" revenue. Since the organization of the Forest Service in 1912 this revenue has varied between a low of 1.7 million dollars (1915) and a high of 3.6 million (1927) and has averaged $2,716,023. Forest expenditures (the maintenance fund as we have called it elsewhere) during the same period have averaged $674,036 per year, or a little less than one-quarter of the income. Surplus forest income over and above the cost of administration for the twenty-five years 1912–1937 has amounted to more than 53 million dollars.

In addition to the sums discussed above, the Forest Service assesses and collects a scaling fee per M. on logs scaled west of the Cascades and a forest-protection tax per acre on alienated timber lands throughout the Province, neither of which is considered to be revenue in the usual sense, and these sums do not appear in the tabulations of income and expenditure. The scaling fees make up the Scaling Fund, which is administered separately. All Coast scaling costs are defrayed from this fund, which is self-sustaining. All forest-protection costs are defrayed from the Forest Protection Fund, likewise administered as a separate account outside the scope of ordinary revenue and expenditure. Protection-tax collections are credited directly to this Fund and are not shown as revenue, but the Government contribution to the Fund shows as a lump sum in the statement of general expenditure. The Protection Fund has not shown a credit balance since 1934, but, by virtue of strict economy and recent favourable fire seasons, the deficit has been reduced from a high of $651,962 in 1932 to $147,230 on December 31st, 1937.

Details of income and expenditures are to be found in the following tables and statements:—


FOREST REVENUE AND EXPENDITURE
Averages 1912-1936
$2,716,923
$679,006
$674,036
FOREST REVENUE. (Does not include Scaling Fees or collections on Forest Protection Fund Account. See detail tables)
EXPENDITURE
25% of Revenue
GROSS FOREST EXPENDITURE (Includes Forest Reserve Account and Government contribution to Forest Protection Fund)
MILLIONS
YEARS
1912
14
16
18
20
22
24
26
28
30
32
34
36
1
2
3
4


BRITISH COLUMBIA'S INCOME DOLLAR
Average annual value of Production (1927-1935)
in
Primary Industries including manufacture.
FORESTS
$163,308,300
36¢
AGRICULTURE
27¢
$47,054,521
MINING
27¢
$48,644,367
FISHERIES
10¢
$17,724,249

FOREST REVENUE.

	12 Months to Dec. 31, 1935.	12 Months to Dec. 31, 1934.	12 Months to Dec. 31, 1933.	12 Months to Dec. 31, 1932.	Ten-year Average, 1928–37.
Timber-licence rentals	$496,386.11	$548,816.73	$331,948.95	$478,458.93	$654,914.00
Timber-licence transfer fees	1,540.00	1,645.00	480.00	930.00	1,735.00
Timber-licence penalty fees	19,858.46	69,302.21	16,004.43	11,687.62	30,296.00
Hand-loggers' licence fees	1,075.00	1,300.00	1,975.00	2,000.00	1,320.00
Timber-lease rentals	68,132.18	63,212.79	57,859.54	70,026.38	69,652.00
Timber-lease penalty fees	1,071.58	1,565.97	1,265.18	848.88	831.00
Timber-sale rentals	17,684.57	21,281.83	14,061.93	12,009.29	23,060.00
Timber-sale stumpage	319,424.91	289,709.62	244,225.17	279,034.76	421,236.00
Timber-sale cruising	6,846.88	5,706.12	3,650.69	3,359.20	7,336.00
Timber-sale advertising	935.60	771.30	561.25	569.30	1,106.00
Timber royalty and tax	1,581,225.07	1,155,862.37	963,511.71	1,046,070.65	1,467,812.00
Scaling fees (not Scaling Fund)	312.76	334.71	225.73	374.42	646.00
Scaling expenses (not Scaling Fund)	128.89	116.05	23.80	20.30	95.00
Trespass penalties	7,478.91	5,924.39	3,399.67	2,535.16	6,844.00
Scalers' examination fees	250.00	25.00	20.00	40.00	203.00
Exchange	123.01	123.80	350.47	305.02	414.00
Seizure expenses	237.74	260.50	1,299.13	1,057.39	1,164.00
General miscellaneous	3,830.19	2,745.57	3,051.42	4,265.74	3,567.00
Timber-berth rentals and bonus	25,658.94	31,631.46	30,281.53	33,601.49	29,170.00
Interest on timber-berth rentals and bonus	316.50	1,065.42	576.41	597.54	564.00
Transfer fees on rentals and bonus	55.48	199.40	28.37	270.00	111.00
Royalty interest	150.16	45.06	49.90	489.34	723.00
	$2,562,752.94	$2,201,645.30	$1,674,855.28	$1,948,550.41	$2,713,638.00
Grazing fees and interest	14,522.41	11,411.56	11,759.13	13,409.37	13,878.00
Taxation from Crown-grant timber lands	309,877.20	326,550.10	321,596.01	391,722.27	350,485.00
	$2,877,152.55	$2,539,606.96	$2,008,210.42	$2,353,682.05	$3,078,004.00
Timber-licence rentals	$559,371.00	$610,421.32			
Timber-licence transfer fees	1,025.00	2,165.00			
Timber-licence penalty fees	30,918.96	50,414.15			
Hand-loggers' licence fees	750.00	875.00			
Timber-lease rentals	61,076.23	66,625.92			
Timber-lease penalty fees	166.30	422.06			
Timber-sale rentals	27,591.39	20,454.84			
Timber-sale stumpage	523,252.96	398,868.56			
Timber-sale cruising	8,573.19	8,155.05			
Timber-sale advertising	1,464.35	1,137.90			
Timber royalty and tax	1,881,271.63	1,912,268.61			
Scaling fees (not Scaling Fund)	229.17	321.23			
Scaling expenses (not Scaling Fund)	85.22	105.11			
Trespass penalties	12,847.49	5,526.01			
Scalers' examination fees	535.00	290.00			
Exchange	209.34	282.03			
Seizure expenses	252.01	2,020.17			
General miscellaneous	2,769.06	3,183.23			
Timber-berth rentals and bonus	23,574.47	26,123.68			
Interest on timber-berth rentals and bonus	168.81	539.40			
Transfer fees on rentals and bonus	85.52	80.32			
Royalty interest		3,194.28			
	$3,136,217.10	$3,118,473.87			
Grazing fees and interest	24,793.27	11,768.52			
Taxation from Crown-grant timber lands	305,261.27	299,992.41			
Total revenue from forest sources	$3,466,271.64	$3,426,234.80			

FOREST REVENUE.

Fiscal Year 1936–37.

Timber-licence rentals	$563,846.56
Timber-licence transfer fees	1,075.00
Timber-licence penalty fees	40,807.78
Hand-loggers' licence fees	775.00
Timber-lease rentals	58,718.82
Penalty fees and interest	124.24
Timber-sale rentals	18,969.25
Timber-sale stumpage	407,909.65
Timber-sale cruising	8,157.05
Timber-sale advertising	1,177.20
Timber royalty and tax	1,842,387.52
Scaling fees (not Scaling Fund)	329.36
Scaling expenses (not Scaling Fund)	126.39
Trespass penalties	5,341.67
Scalers' examination fees	290.00
Exchange	172.52
Seizure expenses	2,011.77
General miscellaneous	2,123.08
Timber-berth rentals, bonus, and fees	27,376.01
Interest on timber-berth rentals and bonus	552.10
Transfer fees on timber berths	92.32
Royalty interest	3,182.97
	$2,985,546.26
Grazing fees and interest	15,508.58
Taxation, Crown-grant timber lands	299,992.41
Total revenue from forest resources	$3,301,047.25

~~Revenue from~~ Logging Operations, 1937.

(Amounts charged.)

Forest District.	Royalty and Tax.	Penalty.	Seizure Expenses.	Govt. Scale. Scaling Expenses.	Govt. Scale. Scaling Fees.	Scaling Fund. Scaling Expenses.	Scaling Fund. Scaling Fees.	Stumpage. *	Total.
Vancouver	$1,534,739.05	$14,173.18	$148.76	$42.30	$199.19	$26,134.11	$113,388.79	$223,809.03	$1,912,634.41
Prince Rupert	140,106.42	273.14	.....	4.02	25.66	347.83	7,976.74	90,632.77	239,366.58
Fort George	58,572.45	1,087.46	40.00	6.00	.....	.....	.....	53,147.19	112,853.10
Kamloops	129,058.44	787.62	55.45	12.50	2.00	.....	.....	128,099.06	258,015.07
Nelson	108,742.38	1,976.91	93.53	14.25	1.50	.....	.....	56,110.72	166,939.29
Totals, 1937	$1,971,218.74	$18,298.31	$337.74	$79.07	$228.35	$26,481.94	$121,365.53	$551,798.77	$2,689,808.45
Totals, 1936	$1,910,468.78	$4,205.73	$948.46	$80.87	$337.03	$25,463.31	$139,706.30	$446,185.89	$2,527,396.37
Totals, 1935	$1,605,321.91	$5,940.50	$213.94	$58.76	$231.87	$21,314.46	$124,425.21	$337,359.58	$2,094,866.23
Totals, 1934	$1,237,968.70	$7,382.38	$251.70	$106.36	$183.89	$17,436.57	$99,563.66	$324,116.42	$1,687,009.68
Totals, 1933	$918,663.03	$2,866.76	$197.93	$112.94	$200.66	$13,570.34	$82,212.92	$219,497.38	$1,237,321.96
Totals, 1932	$1,046,588.92	$3,983.03	$368.73	$56.66	$225.73	$13,368.44	$71,596.21	$307,371.82	$1,443,559.54
Totals, 1931	$1,140,282.78	$4,950.55	$994.87	$42.20	$1,092.07	$16,444.18	$82,078.03	$425,978.06	$1,672,862.74
Ten-year average, 1928–37	$1,493,723.55	$7,948.59	$857.42	$100.98	$617.50	$19,812.87	$106,915.21	$459,783.79	$2,089,759.95

* Up to 1937 this figure includes all timber sale charges other than Royalty Includes rentals, advertising etc & even F.P. Tax. Therefore is not comparable with "Stumpage" in table of Revenue on opposite page. 1938 & thereafter directly comparable. Correct figures from 1936 in 1938 Report, page 1216.

1936 1937

FOREST EXPENDITURE, FISCAL YEAR 1936-37.

Forest District.	Salaries.	Temporary Assistance.	Expenses.	Total.
Vancouver	$53,289.78	$465.48	$27,022.89	$80,778.15
Prince Rupert	21,256.89	.....	14,076.87	35,333.76
Fort George	19,416.94	244.20	6,341.67	26,002.81
Kamloops	35,164.65	.....	17,454.75	52,619.40
Nelson	29,446.70	.....	18,457.74	47,904.44
Victoria	68,228.32	712.83	14,687.20	83,628.35
Totals	$226,803.28	$1,422.51	$98,041.12	$326,266.91

Lumber-trade extension	50,000.00
Canadian Forestry Association	2,000.00
Reconnaissance	1,888.43
Forest research	1,993.08
Reforestation	4,383.45
Incidentals and contingencies	289.20
Grazing-range improvements	4,356.36
Forest Protection Fund*	300,000.00
Forest Reserve Account*	62,298.16
Grand total	$753,475.59

* Amounts granted by Government to special funds detailed elsewhere.

SCALING FUND.

Balance, April 1st, 1936 (credit)	$15,185.98
Expenditure, fiscal year 1936–37	131,363.54
	$116,177.56
Charges, fiscal year 1936–37	154,923.27
Balance, March 31st, 1937 (credit)	$38,745.71 = $37.478
Balance, April 1st, 1937 (credit)	$38,745.71
Expenditures, 9 months, April–December, 1937	122,930.12
	$84,184.41
Charges, 9 months, April–December, 1937	131,076.73
Balance, being excess of charges over expenditures	$46,892.32

For correct statement see p. 1261

FOREST RESERVE ACCOUNT.

Balance brought forward, April 1st, 1936	$9,683.56
Amount received from Treasury, April 1st, 1936 (under subsection (2), section 32)	62,298.16
Moneys received under subsection (4), section 32	.....
	$71,981.72
Expenditure, fiscal year 1936–37	57,880.23
Balance (credit), March 31st, 1937	$14,101.49
Amount received from Treasury, April 1st, 1937 (under subsection (2), section 32)	67,669.16
Moneys received under subsection (4), section 32	.....
	$81,770.65
Expenditure, 9 months to December 31st, 1937	41,966.04
Balance (credit), December 31st, 1937	$39,804.61

FOREST PROTECTION FUND.

The following statement shows the standing of the Forest Protection Fund as at December 31st, 1937:—

Balance (deficit), April 1st, 1936		$188,262.72
Expenditure		416,350.87
		$604,613.59
Collections, tax	$107,242.18	
Collections, miscellaneous	15,434.44	
Government contribution	300,000.00	
		422,676.62
Balance (deficit), March 31st, 1937		$181,936.97
Balance (deficit), April 1st, 1937		$181,936.97
Expenditure, 9 months, April–December, 1937		317,078.67
		$499,015.64
Collections, tax	$114,010.79	
Collections, miscellaneous	12,774.28	
Government contributions	225,000.00	
		351,785.07
Balance (deficit), December 31st, 1937		$147,230.57

ESTIMATED AND KNOWN COSTS OF FOREST PROTECTION TO OTHER AGENCIES, 1937.

Forest District.	Expenditures for				
	Tools and Equipment.	Improvements.	Patrol.	Fire-fighting.	Total.
Vancouver	$64,594.00	$4,150.00	$61,304.00	$18,840.00	$148,888.00
Prince Rupert	828.00	95.00	573.00	102.00	1,598.00
Fort George	.....	.....	.....	584.00	584.00
Kamloops	.....	.....	.....	960.00	960.00
Nelson	14,109.00	.....	2,919.00	3,988.00	21,016.00
Totals	$79,531.00	$4,245.00	$64,796.00	$24,474.00	$173,046.00
Totals, 1936	$46,066.00	$125.00	$54,781.00	$34,651.00	$135,623.00

EXPENDITURE FOR TWELVE MONTHS ENDED MARCH 31ST, 1937.

Districts.	Patrols and Fire Prevention.	Tools and Equipment.	Fires.	Improvements.	Total.
Vancouver	$73,778.56	$8,475.40	$12,684.31	$1,544.98	$96,483.25
Prince Rupert	17,364.41	601.14	431.14	336.36	18,733.05
Fort George	19,859.84	1,870.08	2,911.18	520.92	25,162.02
Kamloops	50,239.65	4,045.07	13,393.11	2,758.72	70,436.55
Nelson	53,608.48	3,308.16	101,073.70	5,172.46	168,162.80
Victoria	35,324.79*	2,048.41	.....	.....	37,373.20
Totals	$255,175.73	$20,348.26	$130,493.44	$10,333.44	$416,350.87

Patrols and fire prevention	$255,175.73
Tools and equipment	20,348.26
Fire	130,493.44
Improvements	10,333.44
Total	$416,350.87

* This amount includes purchase and upkeep of cars used by Forest Development Projects and a total of $10,637 for rent of same was refunded to F.P.F.

FOREST PROTECTION.

The fire season of 1937 proved to be one of the most favourable since the organization of the Forest Service. Costs and damage are shown, in the tables to follow, to be well below the averages for the past ten years. The weather cycle, for so many years below normal in precipitation, has been at or above the average since 1931. Although in most seasons some part of the Province experiences a bad fire-hazard, in 1937 conditions were favourable in all districts throughout the season.

The cyclic behaviour of weather has been well proved by past records, even to the growth-rings on fossilized trees. We may expect, therefore, that sooner or later there will be a downward swing of the precipitation curve with dry summers and high fire-hazard. In the meantime it is highly important that staff, improvements, and equipment be built up to a state of efficiency that can cope with disastrous years such as 1925, 1929, and 1931. No one would consider for a moment cutting down the staff and equipment of a city fire department because fires had not occurred for some time. Rather, the extra time and funds made available are used to train staff, improve and extend equipment, and broaden preventive efforts.

The same principle holds for the forest-protection organization. Forest fires may start at any time during the fire season, from a variety of causes and, more important still, at any remote part of the enormous territory of the Province. The inflammable nature of the litter on the forest floor, the steep rugged slopes, high winds, and lack of roads or trails over vast areas make the job of forest-fire control one of greatest difficulty and complexity. It follows logically that highly-trained, alert men are needed as a nucleus of the organization. The quality of the men entering the Service is assured through the examination system maintained, but training subsequent to appointment is of necessity neglected. This is due entirely to lack of staff and great pressure of other duties. It should be corrected at as early a date as possible.

Savings made because of the favourable season of 1937 will make it possible to further increase our equipment towards the point of sufficiency and to reduce substantially the deficit in the Forest Protection Fund.

The Young Men's Forestry Training Plan again proved its value from a forest-protection standpoint. With about 600 young men in camp and acting as assistants to the Forest Rangers, a very creditable amount of useful improvement-work was done, while the training they received has developed a nucleus of highly useful forest-protection men. That their training is proving of use, both to themselves and the Province, is shown by the numbers who pass the Assistant Ranger examinations successfully in open competition, and who secure jobs with the lumbering industry.

During 1937 investigations were made into the systems of radio communication developed successfully in the National Forests of the United States. As a result, ten portable radio sets were bought and installed in various lookout stations. Although not quite so useful as a standard telephone-line, these sets, costing only as much each as a mile of standard line, proved entirely reliable. This initial success shows the possibility of developing cheaply detection and reporting facilities to cover many distant sections. It also proves the values secured from co-operation with other organizations. This has been maintained with the United States Forest Service for many years along the entire length of the International Boundary in British Columbia, to the benefit of both. Fires are no respecters of imaginary lines, and although the territory along the boundary in the Southern Interior has probably the highest hazard in the Province, it is equally high south of the line. In this section co-operative arrangements have been made between the local forces for mutual assistance in detection and control of fires. The Forest Service is greatly appreciative of the help so generously given by all ranks in the sister organization.

The appointment of an Assistant in Research to specialize in forest-fire problems was a marked step forward. Our fundamental knowledge of fire behaviour is limited under variations of season, weather, and fuel conditions; as to the best locations for lookout stations with regard to fire danger; in the science of fire-weather forecasting, which is so important in making preparations in advance of possible outbreaks, or in action on going fires; as to minimum time that should be allowed to get to fires in any location, and in many other problems in the great complexity of forest-fire control. Already advances have been made in fire-weather forecasting, fire-danger rating, and lookout-location. These will be extended and other problems studied as rapidly as possible.

On the Southern Coast, both mainland and Vancouver Island, large-scale logging results in extensive areas of slash. These, as a rule, represent a serious risk to the adjoining green timber and reproducing areas. Frequently private property is also endangered.

Burning of this slash currently each year under controlled conditions is the only known economical method of reducing the hazard. In order to co-operate with the logging industry and assist them in disposing of their slash, an experienced officer from the Forest Service was placed at their disposal for planning and advice. Results were encouraging, more than 27,000 acres of debris having been burned. This, however, approximates only one-half of the slash area created and our average disposal during the past five years has been about one-quarter of the logged area, and greater efforts are required if the currently created hazard is to be disposed of each year.

Less than one-quarter of the fires occurring in 1937 were unpreventable. The balance were caused by human agencies and therefore need not have occurred. How to reach the fire-starting public to impress them with the necessity for carefulness is a constant problem and has been given much study. To this end campaigns of education were carried on through newspaper and periodical advertising, feature articles, and cartoons; lectures to service clubs, schools, and lodges; by road-signs, special fire-day signs and leaflets; and by still and motion pictures. Personal contact with forest-users, both industrial and recreational, was maintained to encourage care with fire and to see that the laws and regulations with regard to necessary use of fire were observed. About 200 meetings were held, reaching more than 11,000 people.

Detailed statistics of the fire season are given in the following pages.

FIRE OCCURRENCES BY MONTHS, 1937.

Forest District.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Total.
Vancouver	2	24	80	93	70	52	.....	321
Prince Rupert	8	22	23	2	3	1	.....	59
Fort George	1	40	42	27	15	13	.....	138
Kamloops	6	38	61	100	46	61	.....	312
Nelson	6	67	38	105	67	80	.....	363
Totals	23	191	244	327	201	207	.....	1,193
Ten-year average, 1928–37	73	214	205	436	513	181	.....	1,640

NUMBER AND CAUSES OF FIRES IN PROVINCE, 1937.

Forest District.	Lightning.	Campers.	Railways Operating.	Smokers.	Brush-burning (not Railway-clearing).	Road and Power- and Telephone-line Construction.	Industrial Operations.	Incendiarism.	Miscellaneous (Known Causes).	Unknown Causes.	Total.	Per Cent. of Total Fires in Province.
Vancouver	45	64	21	96	15	2	44	11	19	4	321	26.91
Prince Rupert	....	13	..	12	14	..	..	3	17	....	59	4.94
Fort George	26	40	3	4	45	3	3	1	3	10	138	11.57
Kamloops	73	76	8	58	18	1	4	2	66	6	312	26.15
Nelson	119	76	42	72	15	8	4	3	19	5	363	30.43
Totals	263	269	74	242	107	14	55	20	124	25	1,193	100.00
Per cent.	22.05	22.55	6.20	20.29	8.97	1.17	4.61	1.68	10.39	2.09	100.00	.....
Ten-year average, 1928–37	428	296	155	307	134	17	46	128	106	26	1,640	.....

Damage to Property other than Forests, 1937.

Forest District.	Forest Products in Process of Manufacture.	Buildings.	Railway and Logging Equipment.	Miscellaneous	Total.	Per Cent. of Total.
Vancouver	$58,065.00	$3,240.00	$31,310.00	$960.00	$93,575.00	78.38
Prince Rupert	167.00	.....	.....	.....	167.00	0.14
Fort George	696.00	5,002.00	.....	227.00	5,925.00	4.96
Kamloops	75.00	10.00	.....	263.00	348.00	0.29
Nelson	.....	16,950.00	.....	2,415.00	19,365.00	16.23
Totals	$59,003.00	$25,202.00	$31,310.00	$3,865.00	$119,380.00	100.00
Ten-year average, 1928–37	$65,096.00	$22,103.00	$55,960.00	$12,045.00	$170,204.00	.....

Number and Causes of Forest Fires for the Last Ten Years.

Causes.	1937.	1936.	1935.	1934.	1933.	1932.	1931.	1930.	1929.	1928.	Total.
Lightning	263	524	173	320	285	336	475	892	638	322	4,228
Campers	269	256	217	312	234	230	470	344	358	274	2,964
Railways operating	74	81	65	103	77	156	295	149	267	282	1,549
Railways under construction	.....	.....	.....	.....	.....	.....	.....	.....	9	.....	9
Smokers	242	321	289	415	197	197	435	294	387	294	3,071
Brush-burning (not railway-clearing)	107	78	127	117	77	108	243	171	167	149	1,344
Road and power- and telephone-line construction	14	6	11	10	7	18	44	29	22	13	174
Industrial operations	55	29	45	41	32	17	57	39	65	80	460
Incendiarism	20	74	72	65	65	127	355	262	139	103	1,282
Miscellaneous (known causes)	124	152	97	188	90	64	96	68	100	84	1,063
Unknown causes	25	26	15	19	18	13	48	23	36	41	264
Totals	1,193	1,547	1,111	1,590	1,082	1,266	2,518	2,271	2,188	1,642	16,408

Fires classified by Place of Origin and Cost of Fire-fighting, 1937.

Forest District.	Total Fires.	Originated on vacant Crown Land and Lands paying F.P. Tax.	Originated on Lands not paying F.P. Tax.	Extinguished without Cost. Number.	Extinguished without Cost. Per Cent. of Total Fires in District.	Extinguished without Cost. Per Cent. of Total Fires in Province.	Cost Money to extinguish. Number.	Cost Money to extinguish. Per Cent. of Total Fires in District.	Cost Money to extinguish. Per Cent. of Total Fires in Province.	Cost Money to extinguish. Cost less than $100.	Cost $100 to $1,000.	Cost $1,000 to $5,000.	Cost $5,000 to $10,000.	Cost over $10,000.	Total Forest Service Costs in fighting Fire. Dollars.	Total Forest Service Costs in fighting Fire. Per Cent. of Total Spent in Ashtray Fires in Province.	Average Cost per Fire. Dollars.
Vancouver	321	111	210	142	44.24	11.90	179	55.76	15.00	144	30	5	.....	.....	5,695.95	20.12	17.74
Prince Rupert	59	21	38	47	79.66	3.94	12	20.34	1.01	7	4	1	.....	.....	2,501.25	8.84	42.39
Fort George	138	62	76	89	64.50	7.46	49	35.50	4.11	44	5	.....	.....	.....	2,093.13	7.40	15.16
Kamloops	312	186	126	236	75.64	19.78	76	24.36	6.37	70	6	.....	.....	.....	2,906.23	10.27	9.31
Nelson	363	312	51	160	44.07	13.41	203	55.93	17.02	181	19	3	.....	.....	15,195.01	53.37	41.61
Totals	1,193	692	501	674	.....	56.50	519	.....	43.50	446	64	9	.....	.....	28,301.57*	100.00	28.72
Per cent.	100.00	58.00	42.00	56.80	.....	.....	43.50	.....	.....	85.93	12.34	1.73	.....	.....	.....	.....	.....
Ten-year average, 1928–37	1,640	945	695	839	.....	.....	801	.....	.....	599	158	36	4	2	177,360.00*	.....	88.00

Cost to other parties (226 cost fires), $24,474.16; cost to Forest Branch (801 cost fires), $28,301.57.
*Cost correct to date. Subject to later revision.
Detailed final costs are published one year in arrears in the table of "Expenditure by Districts" in each annual report.

1938
1939

Fires classified by Size and Damage, 1937.

Forest District.	Total Fires.		Under ¼ Acre.			¼ to 10 Acres.			Over 10 Acres in Extent.			Damage.		
	Number.	Per Cent. of Total Fires in Province.	Number.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in this Class.	Number.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in this Class.	Number.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in this Class.	Under $100.	Between $100 and $1,000.	Over $1,000.
Vancouver	321	26.91	159	49.53	26.95	128	39.87	30.48	34	10.60	18.58	299	13	9
Prince Rupert	59	4.94	16	27.12	2.71	23	38.98	5.47	20	33.90	10.93	56	3	.....
Fort George	138	11.57	44	31.88	7.45	59	42.76	14.05	35	25.36	19.13	132	6	.....
Kamloops	312	26.15	125	40.06	21.19	122	39.10	29.05	65	20.84	35.52	299	13	.....
Nelson	363	30.43	246	67.77	41.70	88	24.24	20.95	29	7.99	15.84	351	9	3
Totals	1,193	100.00	590	.....	100.00	420	.....	100.00	183	.....	100.00	1,137	44	12
Per cent.	100.00	.....	49.45	.....	.....	35.21	.....	.....	15.34	.....	.....	95.31	3.69	1.00
Ten-year average, 1928–37	1,640	.....	709	.....	.....	566	.....	.....	365	.....	.....	1,478	106	55

Causes, Cost, and Damage, 1937.

Causes.	No.	Per Cent.	Cost.	Per Cent.	Damage.	Per Cent.
Lightning	263	22.05	$7,545	26.66	$3,988	2.56
Campers	269	22.55	5,773	20.40	16,434	10.55
Railways operating	74	6.20	151	0.53	372	0.23
Smokers	242	20.29	5,680	20.07	3,361	2.17
Brush-burning (not railway-clearing)	107	8.97	4,803	16.97	21,966	14.11
Road, power, telephone, and telegraph	14	1.17	515	1.82	691	0.44
Industrial operations	55	4.61	281	0.99	102,759	65.96
Incendiarism	20	1.68	1,740	6.15	324	0.20
Miscellaneous (known causes)	124	10.39	1,795	6.35	5,804	3.93
Unknown causes	25	2.09	19	0.06	65	0.05
Totals	1,193	100.00	$28,302	100.00	$155,764	100.00

Prosecutions for Fire Trespass, 1937.

Forest District.	Information laid.	Contravention of Section 116 of "Forest Act."	Contravention of Section 114 of "Forest Act."	Contravention of Section 100 of "Forest Act."	Burning without Permit.	Section 513A, Criminal Code.	Failing to report Fire.	Fines.		Served sentence in Gaol.	Suspended Sentence.	Cases dismissed.	Cases pending.	Cases withdrawn.
								No.	Amount.					
Vancouver	10	...	...	...	8	2	...	3	$75.00	2	2	...	...	3
Prince Rupert	1	...	...	...	1	...	...	...	.....	...	1	...	...	—
Fort George	4	...	1	...	3	...	...	1	25.00	3	...	...	...	...
Kamloops	4	1	...	1	2	...	...	1	25.00	...	3	...	...	...
Nelson	5	...	...	...	5	...	...	2	50.00	...	3	...	...	...
Totals	24	1	1	1	19	2	...	7	$175.00	5	9	...	...	3
Ten-year average, 1928–37	22	...	...	...	...	...	...	12	$351.00	...	...	...	...	...

Damage caused by Forest Fires, 1937, Part I.

Forest District.	Merchantable Timber.				Immature Timber.		Not satisfactorily restocked.			
	Net Area killed.	Volume killed.	Volume salvable.	Net Stumpage Loss.	Net Area killed.	Present Value.	Logged.	Logged and burned.	Burned.	Damage.
	Acres.	M. Ft. B.M.	M. Ft. B.M.	$	Acres.	$	Acres.	Acres.	Acres.	$
Vancouver	168	1,573	379	1,426	1,169	5,356	3,117	1,421	237	2,190
Prince Rupert	16	190	.....	190	178	230	6	.....	6,453	.....
Fort George	1,200	8,836	100	8,619	305	1,064	169	230	1,745	.....
Kamloops	398	1,184	39	728	227	563	180	287	9,163	.....
Nelson	865	1,480	47	1,312	2,761	5,922	396	23	926	2
Totals	2,647	13,263	565	12,275	4,640	13,135	3,868	1,961	18,524	2,192
Per cent.	4.82	100.00	4.26	33.74	8.46	36.10	7.05	3.58	33.78	6.03
Ten-year average, 1928–37	80,339	312,831	45,327	320,059	100,063	301,640	.....	.....	.....	.....

Damage caused by Forest Fires, 1937, Part II.

Forest District.	Non-commercial Cover.		Grazing or Pasture Land.		Non-productive Sites.		Grand Totals.					
	Area burned.	Damage.	Area burned.	Damage.	Area burned.	Damage.	Area.		Quantity.		Damage.	
	Acres.	$	Acres.	$	Acres.	$	Acres.	Per Cent.	M. Ft. B.M.	Per Cent.	$	Per Cent.
Vancouver	316	156	1,300	65	323	158	8,051	14.68	1,573	11.86	9,351	25.70
Prince Rupert	1,328	655	299	4	340	167	8,620	15.72	190	1.43	1,246	3.42
Fort George	8,950	4,463	592	4	1,062	381	14,253	25.99	8,836	66.62	14,531	39.93
Kamloops	5,382	2,136	1,747	85	486	243	17,870	32.58	1,184	8.93	3,755	10.32
Nelson	487	239	294	13	297	13	6,049	11.03	1,480	11.16	7,501	20.63
Totals	16,463	7,649	4,232	171	2,508	962	54,843	100.00	13,263	100.00	36,384	100.00
Per cent.	30.02	21.02	7.71	0.47	4.58	2.64	100.00	.....	.....	.....	100.00	.....
Ten-year average, 1928–37	.....	.....	21,793	1,153	.....	.....	451,558	.....	312,831	.....	685,659	.....

1938 1937 1936

COMPARISON OF DAMAGE CAUSED BY FOREST FIRES IN LAST TEN YEARS.

	1937.	1936.	1935.	1934.	1933.	1932.	1931.	1930.	1929.	1928.	Total for 10 Years.
Total number of fires	1,193	1,547	1,111	1,590	1,082	1,266	2,518	2,271	2,188	1,642	16,408
Area burned (acres)	54,843	433,902	47,871	638,690	301,486	421,297	994,979	602,675	909,620	106,977	4,512,341
Standing timber destroyed or damaged (M. ft. B.M.)	13,263	932,808	26,113	817,125	123,815	269,317	210,173	390,978	272,024	24,069	3,079,685
Amount salvable (M. ft. B.M.)	565	23,814	14,359	179,358	21,926	15,057	41,808	25,216	107,049	9,060	438,212
Damage to forests	$36,384	$1,109,473	$68,399	$888,607	$303,964	$514,664	$1,477,181	$1,408,183	$941,738	$103,001	$6,856,594
Damage to other forms of property	$119,380	$66,189	$221,144	$104,877	$146,758	$57,030	$326,305	$337,909	$226,919	$895,534	$1,702,045
Total damage	$155,764	$1,175,662	$289,543	$993,484	$455,722	$571,694	$1,803,486	$1,746,092	$1,168,657	$198,535	$8,558,639

BURNING PERMITS, 1937.

Forest District.	Clearing Agricultural Land.				Clearing Logging-slash.				Clearing Public Roads.				Clearing Railway Right-of-way.				Grand Totals.			
	Permits issued.	Area burned over.	Fires escaped Control.	Fires set with-out Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set with-out Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set with-out Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set with-out Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set with-out Permit.
	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Acres.	No.	No.
Vancouver	3,108	3,758	6	5	103	17,430	48		95	387	1		25	248			3,331	21,823	7	5
Prince Rupert	995	2,179	6	1	63	48			40	96			17	50			1,115	2,373	6	1
Fort George	1,181	5,153	44	28	110	3,833	2	1	43	82	3		7	43	3		1,341	9,111	52	29
Kamloops	1,052	4,100	6	6	29	78		1	27	669	3		16	6	3		1,124	4,853	9	7
Nelson	1,723	7,621	15	5					19	32			28	10	5		1,770	7,662	23	5
Totals	8,059	22,811	77	45	305	21,389	2	2	224	1,266	7		93	357	11		8,681	45,823	97	47
Per cent.	92.84	49.79	79.38	95.74	3.51	46.68	2.06	4.26	2.58	2.76	7.22		1.07	0.77	11.34		100.00	100.00	100.00	100.00
Ten-year ave., 1928–37																				
	9,380	21,295	53	29	349	8,284	5	2	216	1,842	8	1	96	1,978	7		10,042	33,398	75	32

GRAZING.

A late spring in 1937, followed by a well-watered summer season and late fall, resulted in the cattle going on the early range in poor condition, but later retrieving their loss and returning to their home ranches in excellent shape. The long spring feeding season depleted hay supplies, while early snows in some parts made feeding imperative before the usual time. Unless the winter of 1937–38 proves short and comparatively mild, there are likely to be heavy losses of stock toward the spring of 1938 and undoubtedly many cattle will be turned out in poor condition.

Range live stock make most of their growth during the summer season while they are on Crown range. Their increase in weight, general condition, and ability to reproduce are dependent upon the nature and quantity of the feed they secure. The more palatable forage planted found on well-managed range contains more of the necessary nutritional values than do the less palatable plants on overgrazed range. Many of the commoner diseases of range live stock are due to poor nourishment and lack of mineral elements found in the better forage. It follows naturally that good range-management, which will result in ample growth of the best forage plants, is essential to the welfare of the stock industry. As fast as the necessary knowledge of range conditions is accumulated through reconnaissance, range-management can be started.

Since most cattle-ranges are used in common by many stockmen, encouragement is given to the formation of stock associations under the "Grazing Act." A considerable measure of self-government on the range is given to the associations and, through their co-operation with the field officers of the Forest Branch, many ranges are being used under management plans.

Our programme of range reconnaissance was continued during 1937. A total area of approximately 200,000 acres was covered, mainly on the Big Creek Range in the Chilcotin.

This work shows that there is still plenty of summer range for the cattle of that country, but spring and fall range are scarce. When completed the report will show how much range of each kind is available, where it is situated, and how heavily it has been used. With that basis any indicated improvements in management can be instituted.

There are still large areas of Crown range that have not been covered by reconnaissance. Until 1937 only one field officer was provided to supervise the grazing administration in the Kamloops District, where the bulk of the range country is situated. Two temporary assistants for reconnaissance were engaged in the spring of 1937, one being retained to complete reports in the winter and the other returning to university for further training. A further large area should be covered in 1938 with the assistance of these men.

In the Kamloops District alone there are over 600 individual permittees on the Crown range each year with ever-changing problems. Although the Forest Rangers include grazing administration among their other duties, there remain a great many problems that require more time than the Ranger can spare, and frequently specialized knowledge or greater authority is necessary. It will be necessary to employ at least the same number of staff as in 1937 if we are even to maintain the ranges in their present condition, let alone increase our knowledge and improve them through management.

Various game clubs are giving attention to the effect of grazing on wild life, especially the grazing of sheep on the high mountain areas. Lack of staff has prevented proper investigation of the cases presented, but close co-operation is maintained with the Game Commission, whereby special areas are protected until a thorough examination can be made. With the increasing use of forest areas for recreational purposes and greater demands from the expanding live-stock industry for range, it becomes more imperative that full knowledge of conditions be obtained and acted upon in the best interests of the Province as a whole.

An important problem that has not yet been solved is that of beetle-killed pine. Vast areas of summer range are being littered by the constant falling of this dead timber. To let it lie leaves the range useless, while to set it on fire may entail unknown loss and damage. The result of burning on the range itself is usually disastrous. Where considerable areas of useful range are isolated by areas of down timber they are made available by trails, but this does not solve the problem of the actual areas covered by deadfall.

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Market Conditions.

After several years of low prices for stock during which only the most efficiently-run ranches could break even or make money, the market for 1937 improved very materially. Along with better prices went better-conditioned stock and resulted in most ranchers operating at a profit. Prices for grain-fed steers ranged up to $8.50 per 100 lb. for car-load lots in May and June, dropping off to $6.75 in July. These prices were partly due to the United States market made available by quota. This quota closed in August, resulting in a drop in price of from 50 cents to $1 per hundred. Fall-grass cattle brought up to $7 per hundred, but probably averaged no better than $6 for tops.

The results of sales continue to emphasize the value of better feeding in the yard and of improved range conditions, which can only be obtained through proper management.

Prices for lambs and wool were also better in 1937, the former averaging ½ cent per pound above 1936 and wool being about 5 cents higher. The sales of wool by the Canadian Co-operative Wool Growers, Limited, from British Columbia were 450,000 lb. in 1937, the increased price representing $22,500 in the pockets of the growers.

Live Stock on Crown Ranges.

The number of live stock permitted on Crown ranges during the past five years was as follows:—

	Cattle and Horses.	Sheep.
1933	58,770	34,329
1934	69,960	36,569
1935	60,864	36,902
1936	77,137	46,084
1937	77,451	42,185

Range Improvements.

Our programme of improving the Crown range by building drift-fences, cutting trails, fencing dangerous mud-holes, developing water, and disposing of wild and useless horses was continued, the total expenditure being $5,649.36. With the co-operation of the ranchers as individuals and associations, work was completed on 41 miles of stock-trails, 23 miles of drift-fencing, 1 breeding-pasture, 5 holding-grounds, 9 mud-holes, 3 water developments, 1 cattle-guard, and 3 experimental plots. One hundred and thirty-eight wild horses were removed from the range.

PERSONNEL DIRECTORY, 1938.

Victoria Office.

E. C. Manning	Chief Forester.
C. D. Orchard	Assistant Chief Forester.
G. P. Melrose	Forester—Protection—Grazing.
E. E. Gregg	Assistant Forester—Protection.
E. B. Prowd	Forester—Management.
S. E. Marling	Assistant Forester—Management.
F. D. Mulholland	Forester—Surveys.
H. J. Hodgins	Assistant Forester—Surveys.
F. S. McKinnon	Assistant Forester—Research.
N. F. Pite	Chief Accountant.
S. W. Barclay	Royalty Inspector.

Districts.

C. J. Haddon	District Forester, Vancouver.
C. C. Ternan	Assistant District Forester, Vancouver.
M. Gormley	Assistant Forester, Vancouver.
D. B. Taylor	Assistant Forester, Vancouver.
J. G. MacDonald	Fire Inspector, Vancouver.
A. H. Waddington	Fire Inspector, Vancouver.
R. C. St. Clair	District Forester, Prince Rupert.
L. S. Hope	Assistant District Forester, Prince Rupert.
J. E. Mathieson	Fire Inspector, Prince Rupert.
R. D. Greggor	District Forester, Prince George.
R. G. McKee	Assistant District Forester, Prince George.
A. E. Parlow	District Forester, Kamloops.
T. A. Clarke	Assistant District Forester, Kamloops.
L. F. Swannell	Assistant Forester, Kamloops.
C. W. Walker	Assistant Forester, Kamloops.
J. A. Pedley	Fire Inspector, Kamloops.
R. E. Allen	District Forester, Nelson.
K. C. McCannel	Assistant District Forester, Nelson.
W. Holmgren	Fire Inspector, Nelson.

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